JOURNAL
OF THE
American Veterinary Medical Association

FORMERLY
AMERICAN VETERINARY REVIEW
Original Official Organ U. S. Vet. Med. Ass'n.

Edited and Published for the
AMERICAN VETERINARY MEDICAL ASSOCIATION
By
H. PRESTON HOSKINS, CHICAGO, ILL.

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Diseases of Wildlife and Fur-Bearing Animals

Volume XCIII

NEW SERIES VOLUME 46
July, 1938, to December, 1938
CHICAGO, ILL.
1938

JOURNAL

of the

American Veterinary Medical Association

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Vol. XCIII, N. S. Vol. 46 **JULY, 1938** **No. 1**

THE NEW JOURNAL

Beginning with this issue, the JOURNAL of the American Veterinary Medical Association appears in a new format, the first radical change that has been made since the JOURNAL was started. Much time and energy have been devoted by the members of a special committee of the Executive Board, during the past year, to studying plans for revamping the JOURNAL, with the object in view of making it of greater interest to all members of the Association and of greater value to all branches of the veterinary profession.

It will be noted that the page size has been enlarged and the reading matter arranged in two columns. It is believed that this will have at least one advantage in contributing to the ease of reading, a shorter line having a certain advantage in this respect over a longer line.

The makeup of this issue is not to be taken as being a established criterion for future issues. It is suggestive, however, of the course outlined. Conditions within the veterinary profession are changing and a certain amount of flexibility in the JOURNAL is believed to be necessary in order to be able to meet these changing conditions from time to time.

One of the most important forward steps, already taken, is the selection of a corps of associate editors who will work with the editor in developing the new JOURNAL. The associate editors will act in an advisory capacity in helping the editor to solve a steadily increasing number of important questions which are constantly arising for solution.

Furthermore, the associate editors are expected to be of invaluable assistance to the editor in procuring certain types of material for publication. For a long time, it has been realized that the JOURNAL has not published a sufficient amount of material that was of direct interest to the practitioner. Although continuous efforts have been made by the editor, during the past ten years, to secure more of this type of material, there has not been much of a response upon the part of those who were in the best position to supply what was wanted. It is hoped that, with the assistance of several of the associate editors who are close to the field of general practice, more material of direct interest to the

veterinarian in practice will become available for publication in the JOURNAL.

The interests of the various members of the veterinary profession have become so diversified, that a real problem is presented in any effort to produce a single publication in which all of these interests are properly and satisfactorily represented. The statement has been made, times without number, that we are trying to do the impossible in putting out one publication that will satisfy all members of the various branches of the profession.

If it is found that a single publication does not meet the requirements of all members of the profession, then it may become necessary to publish more than one journal in order to meet the situation. This is only one of many problems that remain to be solved insofar as the future development of the JOURNAL is concerned.

Another problem that has complicated the present situation is a satisfactory disposition of the large number of papers that constitute the literary program of each annual convention. The immediate reason for the A. V. M. A. acquiring the *American Veterinary Review* (now the JOURNAL of the A. V. M. A.), some 13 years ago, was to have a place for the publication of these very papers. However, conditions have changed and it has been found that the publication of these convention papers in the JOURNAL, from month to month, is attended with a number of disadvantages.

In the presentation of this issue of the revamped JOURNAL to the members of the American Veterinary Medical Association, the veterinary profession and others interested in veterinary publications, it is hoped that the steps already taken will meet with approval. Bear in mind that some time will be required to bring the publication up to the high standard which we desire to attain ultimately. Conscientious efforts have been made and will continue to be made to bring the JOURNAL up to the standard which the editor and associate editors have in mind. From the very nature of some of the plans contemplated in developing the new JOURNAL, progress may be slow.

As a closing reminder, may we be permitted to direct attention to the fact that the JOURNAL belongs to the membership of the American Veterinary Medical Association, some 4,700 strong. One of the lamentable facts in connection with the JOURNAL is that, on the average, less than 2 per cent of the entire membership ever contribute anything to the JOURNAL. In other words, more than 98 per cent of the membership are content to let a ridiculously small part of the membership make the JOURNAL what it is.

VETERINARY EXHIBIT AT NEW YORK WORLD'S FAIR

A letter has been addressed to the secretary of every veterinary association in the country by Dr. J. R. Mohler, chairman of a special committee of the Executive Board of the A. V. M. A., appointed to raise the necessary funds for financing a veterinary educational exhibit at the New York World's Fair during 1939.

As previously announced in the JOURNAL, the original plan for two exhibits, one at the New York World's Fair and one at the Golden Gate Exposition in San Francisco, was given up when it became apparent that it would be impossible to finance two exhibits.

It is estimated that a suitable exhibit at New York will cost approximately $20,000. of this amount, $5,600 will be needed for rental (4,000 square feet at $14 per square foot). The balance will be needed for constructing the exhibit, lighting, maintenance, and other overhead expenses to be incurred during the six months of the World's Fair.

Over half of the estimated cost of $20,000 has already been subscribed by persons and interests outside of the veterinary profession, through the efforts of Dr. Mohler. The balance, about $9,000, must be raised within the profession. This is less than one dollar from each veterinarian in the country. If you are a member of a local or state veterinary association, see that your organization takes action on Dr. Mohler's letter as soon as possible.

Editorial Staff
Journal of the American Veterinary Medical Association

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Associate Editors

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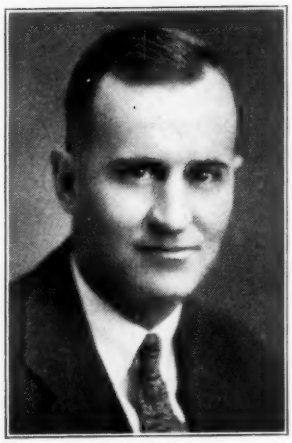
Diseases of Animals in Zoölogical Parks

J. E. SHILLINGER, D.V.M., M.S.
Diseases of Wildlife and Fur-Bearing Animals

J. R. BEACH

Received his veterinary training at Cornell University. Graduated in 1913. Joined veterinary staff of the University of California in January, 1914. Started working on poultry diseases exclusively the following year and still engaged in the same work. Now Professor of Veterinary Science and Veterinarian in the Experiment Station. Author of numerous scientific articles in the field of poultry pathology. Reporter, Section on Fowl Diseases, Twelfth International Veterinary Congress.



EDWARD A. BENBROOK

Graduate of University of Pennsylvania, 1914. Assistant in Veterinary Pathology and Instructor in Bacteriology, University of Pennsylvania, 1914-15. Then joined veterinary staff of Oklahoma Agricultural College, advancing to rank of assistant professor, 1915-18. Since 1918, at Iowa State College. Associate Professor of Veterinary Investigation, 1918-19. Since 1919, Head of Department and Professor of Veterinary Pathology. Secretary of Iowa Board of Examiners in the Basic Sciences, 1935-37. Author of many articles in field of parasitology.

JOHN B. BRYANT

Studied veterinary medicine at Colorado State College. Graduated in 1914. Practiced in the coal fields and range country around Trinidad, Colo., until 1917; then located in Clinton County, Iowa. There he operated a farm and engaged in practice on the side until the fall of 1921, when he located in Mount Vernon, Iowa. There he has conducted a highly successful practice, a large part of which is with swine. He has been very active in local civic affairs and in the Eastern Iowa Veterinary Association.

C. H. CASE

Graduate of Ohio State University, 1904. Member of varsity football team. Spent a year as student assistant to Dr. W. L. Williams, at Cornell University following graduation. Then located in Akron, Ohio. Formed partnership with Dr. J. F. Planz, a classmate, who had just returned from a year of postgraduate study in Germany. This partnership, conducted as the Akron Veterinary Hospital, has developed one of the largest veterinary practices in the United States. Dr. Case has been eminently successful in handling diseases of dairy Cattle.

JAMES FARQUHARSON

A native of Aberdeenshire, Scotland, and a graduate of Colorado State College, class of 1921. His course at Colorado was interrupted by 18 months of military service in the Canadian Army during the World War. Took postgraduate work at Iowa State College in 1922. Taught veterinary anatomy at Colorado State College for twelve years, during which time he also engaged in general practice. Professor and Head of Department of Surgery and Clinics since 1934.

C. P. FITCH

Received his B. S. (1906) and M. S. (1909) from Hamilton College; his D. V. M. from Cornell University (1911) and his D. Sc. (honorary) from Iowa State College (1929). Member of staff of New York State Veterinary College, 1909-17. Then went to University of Minnesota as Professor of Animal Pathology and Bacteriology, and Chief of the Division of Veterinary Medicine. Member of Minnesota State Live Stock Sanitary Board for eleven years, and secretary of the Minnesota State Veterinary Medical Society for twenty years.

WARD GILTNER

Graduate of Cornell University, 1906. Postgraduate work at Alabama Polytechnic Institute, University of Chicago, Michigan State College and University of Michigan. Has been a member of staff of Michigan State College and Experiment Station since 1908. Now Professor of Bacteriology, Bacteriologist to the Experiment Station and Dean of Division of Veterinary Science. Author of several textbooks and numerous papers and bulletins in the field of microbiology, veterinary pathology and public health.

W. F. GUARD

Studied veterinary medicine at Ohio State University (D.V.M., 1912). Spent year as House Surgeon at Veterinary Hospital, O.S.U. Then practiced for about a year. In October, 1914, went to Iowa State College to join veterinary faculty. Rose to Professor and Head of Veterinary Surgery. In 1929, he returned to Ohio State University as Professor of Surgery and Director of Clinics. Now serving as president of the Ohio State Veterinary Medical Association.

RAYMOND A. KELSER

Received his D.V.M. from George Washington University; his A.M. and Ph.D. from American University, both of Washington, D. C. In service of U. S. Bureau of Animal Industry, 1915-18. On active duty in U. S. Army, 1918-20. Commissioned as Captain in Veterinary Corps of Regular Army, July 1, 1920. Now Chief of the Veterinary Division of the Surgeon General's office, with rank of lieutenant colonel. Member of Army Medical Department Research Board, 1925-28 and 1935-38. Author of numerous scientific articles and "Manual of Veterinary Bacteriology."

J. A. S. MILLAR

Received his B.S. from Dartmouth College in 1923, and his V.M.D. from the University of Pennsylvania in 1928. Since graduation, has been associated with his father, Dr. H. C. Miller (U. P. '90), of Asbury Park, N. J., in conducting a general practice and hospital for small animals. Member of local Kiwanis Club and director of Y. M. C. A. Member of A. V. M. A., State Veterinary Medical Association of New Jersey, and local associations in New York and Philadelphia Active in American Animal Hospital Association.

JOHN R. MOHLER

Graduate of the University of Pennsylvania, 1896. Entered the service of the U. S. Bureau of Animal Industry in 1897 as an assistant inspector. Has been Chief of the Bureau since 1917, and directs the work of 6,500 professional and lay employés. Was unanimously elected president of the Twelfth International Veterinary Congress, in 1934, the first American to receive this distinction. Author of numerous articles on pathology, bacteriology, meat inspection, and related subjects.

CHARLES R. SCHROEDER

Received his B. S. and D. V. M. degrees from Washington State College in 1929. With Lederle Laboratories, Inc., at Pearl River, N. Y., as veterinary immunologist 1929-32. Then went to San Diego, California, as veterinary pathologist to the Zoological Society of San Diego and remained in that position until 1937, when he was called to take a similar position with the New York Zoological Society at the Bronx zoo. Holds membership in quite a number of scientific associations.

J. E. SHILLINGER

Graduate of the College of Veterinary Medicine, George Washington University, 1914. Later received his B.S. and M.S. degrees from the University of Maryland. Except for a period of ten months of military service during the World War, Dr. Shillinger has been in the service of the U. S. Department of Agriculture since 1914. For thirten years, he was in the Bureau of Animal Industry. Since 1927, he has been in the Bureau of Biological Survey. Now Head of the Section of Disease Control of that bureou.

EXHIBITORS AT NEW YORK

ABBOTT LABORATORIES

North Chicago, Ill.

Abbott Laboratories, manufacturers of pharmaceutical and biological products for the veterinary profession, will display in their exhibit such items as Nembutal, Pentothal Soduim, Metaphen in Kaolin, Nicamin and Abbott Nutritional Products (including Haliver Oil preparations and Vita-King).

ADLANCO X-RAY CORPORATION

New York, N. Y.

Adlanco X-Ray Corporation will display a line of **physiotherapeutic and x-ray apparatus** especially suitable in veterinary medicine. In collaboration with men of the profession, the manipulations of modern equipment of this type have been so much simplified that practically all attention may be reserved for the animal treated. Of course, the equipment is 100 per cent shock-proof and the x-ray units, in addition, are 100 per cent ray-proof.

ALLIED LABORATORIES—PITMAN-MOORE COMPANY

Kansas City, Mo.—Indianapolis, Ind.

Allied Laboratories, Inc., and Pitman-Moore Company will present two exhibits in booths 5, 6, 7 and 8, one of which will feature their general line of pharmaceutical and biological products for both large and small animal practice. The other will be devoted entirely to their complete line of biological products for the prevention and treatment of canine distemper. Several motion pictures will be a feature of their exhibit.

ASHE LOCKHART, INC.

Kansas City, Mo.

This exhibit will display the fifty-odd biological products prepared by Ashe Lockhart, Inc., for the use of graduate veterinarians, including diagnostic agents, serums, vaccines, bacterins, aggressins, antitoxins, tissue extracts. Printed matter which we have prepared for veterinarians to distribute to their clientele, emphasizing several phases of veterinary service, will also be available.

CAMERON SURGICAL SPECIALTY COMPANY

Chicago, Ill.

Cameron Veterinary Diagnostoset, a combination of electrically lighted instruments furnishing abundant light for Transillumination, Direct Illumination, Accurate Diagnosis, Simplified Technic and Improved Instrumentation. Cameron Cauterodyne for providing safe and effective cutting, coagulating, desiccating and fulgurating with a quick-healing, bloodless field for all phases of surgery will also be demonstrated at the Convention.

THE CAMPBELL ELECTRIC CORPORATION

New York, N. Y.

The engineers who designed the Campbell Animagraph aimed to produce an x-ray apparatus that was as safe from possible x-ray absorption as human ingenuity could devise. The adjustable lead diaphragm confines the x-ray within the border of the fluoroscopic screen. The controlling mechanism within direct reach of the operator offers all the facilities of a complete Roentgen laboratory.

CUTTER LABORATORIES

Chicago, Ill.

The Cutter Laboratories will feature their latest biological specialties, including Gonadin and prepared Dextrose Solutions in Saftiflasks. Of particular interest will be motion-pictures of the work being done by this firm with Hog Cholera Antigen (Tissue Vaccine), developed by Dr. William Hutchins Boynton. A competent representative will be on hand to answer questions concerning it. The Cutter film on Equine Excephalomyelitis will be shown at intervals.

THE DOHO CHEMICAL CORPORATION

New York, N. Y.

The Doho Chemical Corporation will display a large anatomical picture of the ear, showing the process of osmosis, as caused by Auralgan. Furthermore, lantern-slides of photomicrographs of sections of the tympanic membrane will be shown at regular intervals.

EXHIBITORS AT NEW YORK

EISELE & COMPANY

Nashville, Tenn.

The exhibit of Eisele & Company will include Veterinary Thermometers, Hypodermic Needles, Milking Tubes and other sundries used by veterinarians.

FORT DODGE LABORATORIES, INC.

Fort Dodge, Iowa

As usual, **Fort Dodge** will be on hand with all that is latest and best in the way of biological and pharmaceutical products for veterinary use. New exhibit backgrounds and material will be employed that will lay out this up-to-date line in a way that will be extremely interesting to all attendants.

GENERAL ELECTRIC X-RAY CORPORATION

Chicago, Ill.

No veterinarian should miss this, the first showing of the entirely new, more powerful, portable x-ray unit for the veterinary profession—the General Electric Model "F-3." Radiographs made with it by prominent practitioners will be displayed, as will, also, other x-ray equipment and the famous G-E Inductotherm with which much interesting experimental work is now being done in the field of fever therapy on small animals.

HAVER-GLOVER LABORATORIES

Kansas City, Mo.

This exhibit will portray their usual lines of general veterinary supplies—biological, pharmaceutical, surgical—in which will be displayed an ensemble of new and unusual endoscopic instruments and diagnostic apparatus, in addition to improved operating tables and furniture for the small-animal surgery.

HILL PACKING COMPANY

Topeka, Kan.

The keynote of Hill's Dog Food display will be the Seal of Approval of the American Animal Hospital Association. This firm having been one of the first to achieve this distinction, the display is built to compliment the Seal, and to acquaint visiting veterinarians with its meaning, qualifications and value to them.

JENSEN-SALSBERY LABORATORIES, INC.

Kansas City, Mo.

The Jensen-Salsbery Laboratories will display veterinary biological products under the popular trade name of "Jen-Sal." The instrument line which will be on display represents the most popular patterns developed in the field of clinical medicine the past few years. The exhibit will reflect effectively the advancement in equipment, which the practitioner of veterinary medicine has at his command.

THE KENNEL FOOD SUPPLY COMPANY

Fairfield, Conn.

The Kennel Food Supply Company will exhibit K. F. S. Dog Food in cans and K. F. S. Cero-Meato, which are two foods for dogs which have recently received the Seal of Approval of the American Animal Hospital Association after biological and chemical analysis made under the supervision of the Committee on Foods of the American Animal Hospital Association. Representatives of the company will be on hand to explain the foods and distribute circulars giving complete information.

LEDERLE LABORATORIES

New York, N. Y.

Lederle extends a cordial invitation to all veterinarians to visit our exhibit booth. The new Equine Encephalomyelitis Vaccine (Chick) will be featured; also other Lederle Firsts which we have contributed to the veterinary profession (Clear Concentrated Hog Cholera Serum, Canine Rabies Vaccine, Swine Erysipelas Serum, Canine Distemper Vaccine and Virus—Laidlaw-Dunkin Method, Anthrax Spore Vaccine, Anthrax Serum, Carbozoo and Liver Extract with Nicotinic Acid).

EXHIBITORS AT NEW YORK

MERCK & COMPANY, INC.

Rahway, N. J.

In addition to a complete line of veterinary chemicals, Merck & Company, Inc., are featuring two specialty products, Lentin and Canex. Lentin, a new potent choline solution, is increasing in importance as a treatment for impaction, constipation, choke, tympanites, dyspepsia, gastro-intestinal catarrh and other indications requiring a parasympathetic stimulant. Canex, a rotenone-in-oil preparation, has had an extensive clinical background indicating a definite usefulness in treating follicular mange in dogs.

THE C. V. MOSBY COMPANY

Saint Louis, Mo.

Among the 200 books of interest to veterinarians to be exhibited by the C. V. Mosby Company are Gradwohl's "Clinical Laboratory Methods and Diagnosis"; Dodge's "Medical Mycology"; Sutton's "Diseases of the Skin"; Mansfield's "Materia Medica, Toxicology and Pharmacognosy"; Taussig's "Abortion, Spontaneous and Induced"; Titus' "The Management of Obstetrical Difficulties" and Meakin's "Practice of Medicine."

NORDEN LABORATORIES

Lincoln, Neb.

The Norden Laboratories' exhibit of Norden Certified Brand veterinary biologics, pharmaceuticals, and instruments, will be identified by the trademark of quality, The Viking Ship. Certified Brand bacterins, anti-hog cholera serum, as well as a number of pharmaceutical specialties and instruments, will be featured.

SHARP & DOHME

Philadelphia, Pa.

This display will include biological products and pharmaceutical specialties. Among the latter will be items of special interest to the small-animal practitioner, such as Vitamins, Lirimin Capsules and Pabutole. In addition, they will have an interesting moving picture on the production of Antivenin (North American Anti-Snake-Bite Serum). This will show the different species of poisonous snakes in the United States.

R. J. STRASENBURGH COMPANY

Rochester, N. Y.

Our research department has again developed several new pharmaceutical products which will be shown for the first time. See our Strasco stainless steel-top, hydraulic, small-animal operating-table. Our exhibit will be in charge of Harry Beichert and Herbert Warfield. 1938 marks the 52nd year of our Company.

SWIFT & COMPANY

Chicago, Ill.

From the famous Swift Research Laboratories come new and interesting facts on canine nutrition to be featured at the Pard Dog Food exhibit at the New York Convention. Visiting veterinarians are promised a pleasant reception at the Pard booth, say Swift officials.

WILSON & COMPANY

Chicago, Ill.

Wilson & Company will display Ideal Dog Food and Old Trusty Dog Foods. This exhibit will be based on the work being done by a leading midwestern university on the quantitative nutritional requirements of dogs. Visitors will receive complimentary Dog Guides, illustrating and describing 34 of the most popular breeds of dogs.

WINTHROP CHEMICAL COMPANY, INC.

New York, N. Y.

The Winthrop Chemical Company, Inc., extends a cordial invitation to every member of the A. V. M. A. to visit booth 31 where representatives will gladly discuss the latest contributions made by this firm in the field of veterinary medicine. Literature, describing Winthrop preparations and their use in veterinary practice, will be gladly sent to your office or presented to you at the time of your visit.

APPLICATIONS FOR MEMBERSHIP

It is particularly gratifying to be able to list 65 applications for membership in the first issue of the new JOURNAL. This number is the largest for ten months and due credit should be given to certain members of the A. V. M. A. for their interest in both the national organization and in the members of the graduating classes of the colleges with which these A. V. M. A. stalwarts are connected.

Practically one-half of the 63 applications given first listing this month are 1938 graduates. Colorado State College takes the palm with 14 applicants out of a graduating class of 16. Ohio State University is credited with eight, Alabama Polytechnic Institute with six, Kansas State College with two and the University of Pennsylvania with one.

Glancing over the vouchers on the applications mentioned above, we find that Drs. I. E. Newsom and J. Farquharson, of Colorado State College, appear to be the winning team. Their names appear together on 15 of the applications. The name of Dr. W. F. Guard, of Ohio State University, appears 15 times. Other O. S. U. men whose names appear frequently include Drs. J. H. Knapp and R. E. Rebrassier, each five times. Down at Alabama Polytechnic Institute, Dr. R. L. Mundhenk rendered yeoman service. He is a voucher on eight applications assisted by Dr. W. E. Cotton in four cases and Dr. W. M. Howell in three. Dr. F. E. Hull, of the University of Kentucky, vouched for three applicants.

As has been our custom every six months, we quote Section 1 of Article 2 of the By-laws, covering the manner of filing an application for membership:

> Application for membership shall be made upon a blank furnished by the Association, in the handwriting of the applicant, and must be endorsed by two members of the Association in good standing, one of whom must be a resident of the state, province or territory in which the applicant resides. Application must be accompanied by the membership fee of $5.00 and dues pro rata for the balance of the fiscal year current, as stated on the application blank. Application must be filed with the Secretary and be examined by him for correctness and completeness as far as available information will allow. After such approval by the Secretary, the latter will cause to be published in the official JOURNAL, as soon thereafter as possible, said application with name and address of applicant, college and year of graduation, and names of vouchers. If no objections shall be filed with the Secretary, as against the applicant being admitted to membership in the Association, his name shall again be listed in the next issue of the JOURNAL, and if no objections shall have been filed within thirty days after the second publication of the name of the applicant, he shall automatically become a member and shall be so enrolled by the Secretary, and membership card issued. If any objections be filed against any applicant, either on first or second notice, said application will be referred to the Executive Board for consideration.

FIRST LISTING

ALLEN, HUBERT L.
R. F. D., Gallion, Ala.
D. V. M., Alabama Polytechnic Institute, 1937.
Vouchers: R. L. Mundhenk and I. S. McAdory.

BACHTEL, DAVID H.
R. 2, Cleveland Ave. Ext., Canton, Ohio
D. V. M., Ohio State University, 1933. Vouchers: W. F. Guard and J. H. Knapp.

BAILEY, WILLIAM H.
811 E. Hyde Park, Saint Joseph, Mo.
D. V. M., Saint Joseph Veterinary College, 1914. Vouchers: O. S. Crisler and Cecil Elder.

BARGA, WILLARD J.
South Center St., Versailles, Ohio
D. V. M., Ohio State University, 1938. Vouchers: R. E. Rebrassier and W. F. Guard.

BENNETT, JAY H.
838 N. 2nd St., Marshfield, Ore.
D. V. M., Ohio State University, 1915.
Vouchers: C. H. Seagraves and Robert Jay.

BLUMBERG, VICTOR H.
301 Flat Iron Bldg., Asheville, N. C.
D. V. M., Alabama Polytechnic Institute, 1938.
Vouchers: R. L. Mundhenk and W. E. Cotton.

BREED, GRANVILLE W.
1684 Broad St., Providence, R. I.
D. V. M., Chicago Veterinary College, 1918.
Vouchers: J. S. Barber and James W. Armstrong.

BRUCE, RONALD H.
925 Washington St., Norwood, Mass.
V. M. D., University of Pennsylvania, 1935.
Vouchers: H. W. Jakeman and E. F. Schroeder.

CASSIAS, CHARLES S.
8043 Wornall Rd., Kansas City, Mo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

COOK, EARL W.
Kinsman, Ohio
V. M. D., University of Pennsylvania, 1936. Vouchers: Thos. W. Craver and M. D. Stoudt.

DAVIDSON, ARTHUR H.
935 Idlewild Court, Lexington, Ky.
D. V. M., Iowa State College, 1936. Vouchers: F. E. Hull and Cliff D. Carpenter.

DORGAN, WILLIAM F.
2233 Neil Ave., Columbus, Ohio
D. V. M., Ohio State University, 1934. Vouchers: W. F. Guard and J. H. Knapp.

EAGLE, THOMAS M.
Savannah, Mo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

EDMONDS, RUSSELL S.
720 W. State St., Trenton, N. J.
V. M. D., University of Pennsylvania, 1937. Vouchers: R. A. Hendershott and J. G. Hardenbergh.

EIPPERT, PAUL E.
309 S. Main St., Upper Sandusky, Ohio
D. V. M., Ohio State University, 1936. Vouchers: R. E. Rebrassier and W. F. Guard.

FARNEY, JOSEPH A.
4314 Main St., Kansas City, Mo.
B. S., Kansas State College, 1936; D. V. M., Kansas State College, 1938. Vouchers: Edwin J. Frick and B. F. Pfister.

FRIDERICI, WILLIAM J.
Camden, Ohio
B. A., Heidelberg College, 1934; D. V. M., Ohio State University, 1938. Vouchers: W. F. Guard and J. H. Knapp.

GOSS, RAYMOND C.
Middlebury, Vt.
B. V. Sc., Ontario Veterinary College, 1916. Vouchers: G. N. Welch and L. H. Adams.

GREGG, MERWIN J.
Box 97, Farmville, N. C.
D. V. M., Kansas State College, 1938. Vouchers: Edwin J. Frick and J. H. Brown.

HARNEY, JOHN R.
Box 385, Woodbury, N. J.
D. V. M., Michigan State College, 1924. Vouchers: Fred J. Badger and R. A. Hendershott.

HAYNIE, FRED B.
Beaver, Utah
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

HOLMES, C. HAROLD
Versailles Rd., Lexington, Ky.
B. V. Sc., Ontario Veterinary College, 1924. Vouchers: F. E. Hull and W. W. Dimock.

JACOBS, MARVIN H.
140 Ruth St., Fayetteville, N. C.
D. V. M., Iowa State College, 1936. Vouchers: Lt. Col. Henry E. Hess and Lt. John K. Allen.

JACKSON, IVIN M.
Manassa, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

JIMISON, ROBERT L.
2411 Fort Independence St., New York, N. Y.
D. V. M., Ohio State University, 1938. Vouchers: W. F. Guard and J. H. Knapp.

JONES, JOHN D.
20 Randall St., Providence, R. I.
M. D. C., Chicago Veterinary College, 1910. Vouchers: J. S. Barber and James W. Armstrong.

KELLEY, LAWRENCE L.
221 S. Andrews, Fort Lauderdale, Fla.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

KING, JACK A.
R. 3, Box 20a, Colorado Springs, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

LEWIS, RAYMOND R.
Sidney, Ill.
D. V. M., Ohio State University, 1938. Vouchers: W. F. Guard and Leonard W. Goss.

LUSK, NEAL D.
4628 Topper Ave., Ashtabula, Ohio
D. V. M., Ohio State University, 1938. Vouchers: Walter R. Krill and W. F. Guard.

LANG, GEORGE, K.
Dept. of Agr. and Markets, Madison, Wis.
D. V. M., Kansas State College, 1937. Vouchers: James S. Healy and W. Wisnicky.

MCCLAVE, PHILIP L.
8099 Santa Monica Blvd., West Hollywood, Calif.
D. V. M., Colorado State College, 1937. Vouchers: W. L. Curtis and G. W. Blanche.

MCCORNACK, ROD C.
851 17th St., Merced, Calif.
B. S., D. V. M., State College of Washington, 1934. Vouchers: Don L. Mace and Irving G. La Rue.

MCINTYRE, THOMAS M.
225 W. Oak St., Fort Collins, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

MATTHEWS, T. MCCRAE
497 Main St. E., Hamilton, Ont.
V. S., B. S. A., B. V. Sc., Ontario Veterinary College, 1933. Vouchers: Frank J. Cote and C. D. McGilvray.

MAXWELL, ISAAC H.
Lost Creek, W. Va.
D. V. M., Ohio State University, 1938. Vouchers: A. C. Thrash and H. M. Newton.

MONTGOMERY, OTTO L.
Richfield, Utah
D. V. M., Colorado State College, 1937. Vouchers: I. E. Newsom and Jas. Farquharson.

MOORE, RUFUS O., JR.
Havana, Ala.
D. V. M., Alabama Polytechnic Institute, 1938. Vouchers: R. L. Mundhenk and W. E. Cotton.

NIPKO, ROY A.
Castle Rock, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

OTT, HERBERT I.
Ohio State University, Columbus, Ohio
B. S., Manchester College, 1934; D. V. M., Ohio State University, 1938. Vouchers: Walter R. Krill and W. F. Guard.

OZANIAN, CHARLES H.
R. 8, Box 396, Fresno, Calif.
D. V. M., Ohio State University, 1938. Vouchers: W. F. Guard and J. H. Knapp.

PEARCE, CHARLES D.
245 Boulevard, Scarsdale, N. Y.
D. V. M., Cornell University, 1908. Vouchers: C. E. DeCamp and A. G. Hall.

PLEUGER, CARL A.
2146 Freeman Ave., Cincinnati, Ohio
D. V. M., Ohio State University, 1922. Vouchers: R. E. Rebrassier and W. F. Guard.

POUNDEN, WILLIAM D.
Cedaredge, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

PROCTOR, DELANO L.
617 Price Ave., Lexington, Ky.
D. V. M., Ohio State University, 1917. Vouchers: F. E. Hull and Cliff D. Carpenter.

PROPP, HAROLD
828 Peterson St., Fort Collins, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

QUEENER, EDGAR H.
305 W. 5th and Gay St., Knoxville, Tenn.
D. V. M., Cincinnati Veterinary College, 1918. Vouchers: D. Coughlin and H. W. Hayes.

RANDS, ROBERT A.
Lattingtown Rd., Glen Cove, L. I., N. Y.
D. V. M., Ohio State University, 1938. Vouchers: R. E. Rebrassier and W. F. Guard.

RAWNSLEY, MELVILLE C.
409 E. 19th St., Chester, Pa.
B. S., University of Virginia, 1934; V. M. D., University of Pennsylvania, 1938. Vouchers: A. Henry Craige, Jr., and F. E. Lentz.

REINOW, BERT
434 W. Magnolia Ave., Auburn, Ala.
D. V. M., Alabama Polytechnic Institute, 1938. Vouchers: R. L. Mundhenk and W. M. Howell.

RUCH, D. DALLAS.
Wright Apt., Auburn, Ala.
D. V. M., Alabama Polytechnic Institute, 1938. Vouchers: R. L. Mundhenk and W. M. Howell.

RUGGLES, ALFRED C.
841 N. E. Broadway, Portland, Ore.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

SERVAIS, HAROLD A.
232 W. Magnolia Ave., Auburn, Ala.
D. V. M., Alabama Polytechnic Institute, 1938. Vouchers: R. L. Mundhenk and W. E. Cotton.

SHARP, CHARLES E.
243 W. North St., Greenfield, Ind.
D. V. M., Indiana Veterinary College, 1914. Vouchers: J. L. Axby and W. K. York.

SHEETZ, LT. HAROLD O.
Veterinary Hospital, Fort Knox, Ky.
D. V. M., Ohio State University, 1937. Vouchers: W. F. Guard and R. E. Rebrassier.

SMITH, EDWIN J.
Blanca, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

SNODGRASS, WILLIAM B.
R. 7, Box 229A, Salem, Ore.
D. V. M., Kansas State College, 1933. Vouchers: W. H. Lytle and Fred W. Lange.

STUDER, BENJAMIN
314 N. Vine St., Orrville, Ohio
V. S., Ohio State University, 1906. Vouchers: W. F. Guard and Leonard W. Goss.

TEDDER, PHILLIP W.
c/o Jones Hotel, Auburn, Ala.
D. V. M., Alabama Polytechnic Institute, 1938. Vouchers: R. L. Mundhenk and W. M. Howell.

THOMSON, MALCOLM J.
8241 S. Justine St., Chicago, Ill.
D. V. M., Ohio State University, 1916. Vouchers: Oscar V. Brumley, J. S. Jenison and W. R. Kidwell.

TOLLEY, ROFERT F.
1501 S. Nevada Ave., Colorado Springs, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

VANDEVEN, JOHN W.
19 Court St., Frederick, Md.
D. V. M., Ohio State University, 1937. Vouchers: R. V. Smith and W. F. Guard.

WALKER, DAVID A.
Morrisville, Vt.
D. V. M., Cornell University, 1932. Vouchers: G. N. Welch and A. F. Ranney.

WILLIAMS, JOHN C.
Livermore, Colo.
D. V. M., Colorado State College, 1938. Vouchers: I. E. Newsom and Jas. Farquharson.

YARBROUGH, PAUL R.
Box 134, Auburn, Ala.
B. S., Alabama Polytechnic Institute, 1936.
D. V. M., Alabama Polytechnic Institute, 1938. Vouchers: R. L. Mundhenk and W. E. Cotton.

Applications Pending

SECOND LISTING

(See June, 1938, JOURNAL)

Bruner, Lt. Alta R., Fort Benjamin Harrison, Ind.

Lee, Donald G., 39th St. and Woodland Ave., Philadelphia, Pa.

Mirin, Solomon S., Independence, Va.

Rathbone, John A., 470 Broad St., New London, Conn.

Stearly, Ernest L., Main St. and Anderson Ave., Phoenixville, Va.

The amount which should accompany an application filed this month is $7.50, which covers membership fee and dues to January 1, 1939, including subscription to the JOURNAL.

Dog Pays Tax

When the will of a Columbus, Ohio, woman was probated recently it was found that she had left $500.00 to her dog. He had to pay the inheritance tax of 7 per cent on the amount of the legacy.

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Coming Veterinary Meetings

American Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y. July 5-9, 1938. Dr. H. Preston Hoskins, Secretary, 221 N. La Salle St., Chicago, Ill.

New York State Veterinary Medical Society. Hotel Pennsylvania, New York, N. Y. July 5-9, 1938. Dr. F. F. Fehr, Corresponding Secretary, 243 S. Elmwood Ave., Buffalo, N. Y.

Ak-Sar-Ben Veterinary Medical Association. Fontenelle Hotel, Omaha, Neb. July 11, 1938. Dr. J. D. Ray, Secretary, 1124 Harney St., Omaha, Neb.

Kentucky Veterinary Medical Association. Brown Hotel, Louisville, Ky. July 13-14, 1938. Dr. F. H. Riester, Secretary, Buechel, Ky.

Western New York Veterinary Medical Association. Attica, N. Y. July 14, 1938. Dr. F. F. Fehr, Secretary, 243 S. Elmwood Ave., Buffalo, N. Y.

San Diego County Veterinary Medical Association. Zoölogical Research Building, Balboa Park, San Diego, Calif. July 18, 1938. Dr. E. F. Sheffield, Secretary, 3895 Pacific Blvd., San Diego, Calif.

Southern California Veterinary Medical Association. Chamber of Commerce Building, Los Angeles, Calif. July 20, 1938. Dr. B. B. Coale, Secretary, 203 Administration Bldg., Union Stock Yards, Los Angeles, Calif.

Western Michigan Veterinary Medical Association. Ionia Fair Grounds, Ionia, Mich. July 28, 1938. Dr. H. C. McCormick, Secretary, 821 Wealthy St. S. E., Grand Rapids, Mich.

Pacific Northwest Veterinary Medical Association. Hotel Georgia, Vancouver, B. C. August 1-3, 1938. Dr. V. C. Pauhlman, Secretary, 1524 Fifth St., Chehalis, Wash.

Southern California, Veterinary Hospital Association of. Los Angeles, Calif. August 2, 1938. Dr. L. B. Wolcott, Secretary, 1434 W. Slauson Ave., Los Angeles, Calif.

Connecticut Veterinary Medical Association. Pease House, Saybrook Point, Conn. August 3, 1938. Dr. Geo. E. Corwin, Secretary, State Office Bldg., Hartford, Conn.

Dallas-Fort Worth Veterinary Medical Society. Fort Worth, Texas. August 4, 1938. Dr. H. V. Cardona, Secretary, 2736 Purington Ave., Fort Worth, Texas.

Saint Louis District Veterinary Medical Association. Melbourne Hotel, Saint Louis, Mo. August 10, 1938. Dr. J. P. Torrey, Secretary, 610 Veronica Ave., East Saint Louis, Ill.

National Veterinary Medical Association Congress. Glasgow, Scotland, September 5-9, 1938. Mr. F. Knight, General Secretary, 36, Gordon Square, London, W.C.1, England.

American Foundation for Animal Health Makes Two-Year Report

An interesting report on the work of the American Foundation for Animal Health, for the first two years, has been distributed to members of the veterinary profession by the Associated Serum Producers, Inc.

The report covers the chief features of the educational campaign among owners of live stock now being carried on by the Foundation in the interests of the veterinary profession. It details the radio programs, farm paper advertising, newspaper publicity, and other phases of the campaign which seeks to impress upon the farmer the importance of guarding the health of his live stock, and the advantage of using experienced veterinary service to avoid needless losses.

Founded two years ago, by members of the Associated Serum Producers, the American Foundation for Animal Health has been doing splendid educational work in the interests of the veterinarian, and its activities are expected to have a far-reaching effect as the campaign continues.

The Role of Pathologist in Diseases of Poultry*

By WILLIAM H. FELDMAN, *Rochester, Minn.*
Division of Experimental Medicine, The Mayo Foundation

THE science of medicine, as known today, is concerned chiefly with the prevention, alleviation and cure of disease as it affects human beings. However, knowledge of that phase of medicine known as pathology has been extended into the realm of all living things. Pathology is by no means a narrow, restricted portion of the medical sciences limited to the study of the gross and microscopic alterations of morbid tissues. In the true sense, pathology is concerned with the natural history of disease, its cause, its subsequent course and the final results of the morbid process on the affected individual. A pathologist is therefore indispensable in the study of a disease process in any animal.

The position of the pathologist is firmly established in human medicine, not only in revealing to the prospective physician during his student days the natural history of disease processes, but also in determining the causes of death so that the physician is better able to correlate the clinical manifestations of disease and the actual state of affairs which gives rise to altered physiology. The comparative pathologist has a similar, if not a greater, opportunity to contribute to the knowledge of disease as it affects the lower animals. Unfortunately the full measure of the pathologist's value in the solution of problems of disease of the lower animals has not always been realized. This delinquency may be due to a number of reasons, among which may be mentioned the paucity of pathologists who have the necessary training and the failure, in some instances, of those engaged in biologic research to appreciate the role of a pathologist in investigations concerning disease.

Among the lower animals, the disease processes of the domestic mammals have been subjected to much closer analysis by the pathologist than have the diseases of the domestic chicken. This is probably due to economic reasons, since it is only in the past two decades that chickens have attained a position of major importance in the economy of agricultural America. As the industry has grown, the losses due to disease have become better appreciated and means to reduce the losses, which are frequently appalling, are constantly being sought. In this quest we find the poultry husbandryman associated with the biochemist, the biophysicist, the statistician, the geneticist, the parasitologist, the bacteriologist and the pathologist. This is proper since the problems are so tremendous, so complex and so varied that no one individual, no matter how erudite he may be, can possess sufficient wisdom to arrive at the truth in all things.

QUALIFICATIONS EXACTING

The qualifications of the pathologist engaged in the study of diseases of poultry are exacting if the full responsibilities of his function are to be met.

Obviously he should be trained in veterinary medicine in order to gain an appreciation of disease in its inconsistent and varied comparative aspects. Specialized training in pathology is indispensable if for no other reason than to acquire the necessary humility and open-mindedness that should come from the wider perspective of additional study. The ego of all of us needs deflating occasionally and in none of the sciences is arrogance more ill becoming than in the realm of disease. A few facts are known but even these are subject to variation and the facts yet to be discovered should supply a never-ending impetus for the diligent, conscientious worker.

The pathologist and others concerned with problems in poultry disease should be

*Read before the twenty-ninth annual meeting of the Poultry Science Association, Madison, Wisconsin, August 13, 1937.

aware of his limitations. It is especially important that one be able to distinguish the normal from the abnormal morphologic patterns and to recognize variations in the normal so that false interpretations may be avoided. The literature contains many examples of alleged lesions elaborately described and even profusely illustrated, which were actually normal tissues. These errors could have been avoided had the author possessed a proper knowledge of microscopic anatomy.

It is likewise hazardous to assume that analogous structures are morphologically alike in all genera. A knowledge of the microscopic anatomy of mammals alone cannot be depended on for the recognition of structures and morbid changes in fowls. Unless the normal tissues of fowls and the pathologic changes to which they are susceptible are understood, an accurate interpretation of the examination of such tissues cannot be expected.

The pathologist should confine his efforts to those phases of research which are rightfully his and should avoid excursions into realms for which he does not have the necessary prerequisites. In addition to a sound understanding of gross and microscopic anatomy, the pathologist should possess some knowledge of parasitology and bacteriology. Whether a pathologist can ever properly qualify as a bacteriologist may be a matter of conjecture, but he should at least be familiar with routine bacteriologic procedures.

AVIAN HEMATOLOGY

The great interest in certain of the blood dyscrasias of chickens at the present time makes it essential that the pathologist engaged in poultry diseases should know considerable avian hematology. The normal and pathologic blood picture of chickens is very dissimilar to that of mammals and unless one is specially trained in this phase of pathology, confusion is inevitable. Hematology as it pertains to chickens has been greatly neglected and there are in America few persons, indeed, who are qualified in this difficult but important field. For one interested in the pathology of diseases of chickens a thorough training in hematology is essential, particularly in investigational projects in which the actual cause of every death should be established.

The routine methods followed in the study of disease should, in so far as is possible, represent standard procedures. One serious criticism that might be directed against the published results of many investigations has been the failure to adhere to standard methods, particularly in serology, hematology and bacteriology. This does not mean that better methods should not be sought, but the reliability of a method should be proved before it is utilized in a critical experiment.

IMPORTANCE OF AUTOPSIES

In experimental projects pertaining to studies of poultry diseases, the laboratory of the pathologist should be the ultimate destination of all birds used in the experiment. It is only by a careful study of all birds that die, as well as those that survive during the course of the experiment, that a proper interpretation of the results can be made. The importance of necropsies cannot be overemphasized. No matter how pathognomonic the symptoms of a disease may be, the exact nature of the condition can be established with certainty only by a careful necropsy, supplemented when necessary by subsequent laboratory examinations. Spontaneous disease of chickens occurs so frequently that, unless an attempt is made to determine the cause of death in every instance, the final results of a given experiment may lead to fallacious conclusions. It is in this regard that a properly trained pathologist, possessed of a coöperative attitude, and provided with an adequately equipped laboratory, can best serve in the attack on poultry diseases.

A disease is seldom the result of a single episode such as an external wound or fracture but represents in most instances an interplay of several factors including heredity, environment, age, sex, breed and food, in addition to the specific etiologic agent which may be a bacterium, a parasite, an ultramicroscopic virus or an agent of unknown character. Once the complexity of disease processes is recognized, the desir-

ability for group or coöperative research becomes apparent, and where the personnel is available, this constitutes the most comprehensive and rational approach to the understanding of any disease. In the planning of a research project the pathologist should be consulted and methods of procedure worked out and agreed upon. The closest coöperation is necessary at all times if the project is to be consummated harmoniously and with maximal results.

Dead birds must be made available to the pathologist as soon after death as possible, and, if delay is unavoidable, facilities for refrigeration should be provided. The futility of attempting bacteriologic or histologic examinations on tissues of animals after putrefaction has occurred should be obvious to all, yet such material is frequently presented to the pathologist for examination. Such material is usually useless for laboratory study and should be consigned to the waste-can.

MUSEUM SPECIMENS

The wealth of interesting material observed by the pathologist concerned with diseases of poultry provides an unusual opportunity for the collection of gross specimens for preservation for museum purposes. As a means of stimulating interest in poultry pathology, attractively mounted specimens depicting unusual as well as the common morbid conditions are extremely useful. Furthermore, specimens obtained during the course of an experiental study of a specific disease become valuable sources of information when the data are finally compiled for publication. Of course, notes made at the time of necropsy are essential but regardless of how carefully the necropsy findings are recorded, the desire for additional information continually arises when descriptions of the lesions are prepared for publication.

PHOTOGRAPHIC ART

Photography is another valuable means of recording morbid changes and the pathologist should be skilled in this art. Knowledge of gross photography and photomicrography is not difficult to acquire and the ability to obtain results of a high standard of technical perfection should be considered a part of the necessary qualifications of every pathologist. Although the photography in many laboratories of pathology is entrusted to commercial photographers, such service is usually expensive and frequently unsatisfactory. Only the pathologist knows the salient features that should be the center of interest in a given specimen, be it gross or microscopic, and once having mastered the technical aspects of the photographic process, the pathologist is more likely to obtain the required results. If prints of each specimen are properly filed, they will in time constitute an invaluable collection to be drawn on for the illustration of papers, bulletins and books, as well as for the making of lantern-slides. By way of emphasis may I repeat that every pathologist should be interested and skilled in photography.

HELPFUL COUNSEL

The primary objective of every research project should be the determination of facts and the research should be planned so that when the work is completed there will be a reasonable possibility that facts and not confusion will be available. If we were to be perfectly honest, each of us could admit having spent time, money and effort in experiments, the results of which were confusing and useless in that concrete facts were missing. Such instances are frequently unavoidable but may be reduced to a minimum by a careful planning of the project. Particularly helpful is the counsel of one's colleagues. The opinions of others will often enable one to recognize weaknesses in a proposed project which would not otherwise penetrate the blindness of the enthusiasm usually and properly evident when a research problem is contemplated. The work should be done slowly and carefully. Too much so-called research is conceived impetuously, completed in haste and remains forever a published reminder of adolescent foolishness.

INTERPRETATION OF RESULTS

After an experiment has been completed, the data have been sifted and the facts obtained, the facts must then be appraised and

interpreted. This is truly the critical part of every investigational study and requires experience and sound judgment if the conclusions are to be correlated with the actual and not the imagined results. It is here that conservatism is a cardinal virtue. Dogmatic and arbitrary conclusions, predicated on erroneous interpretation of the facts, are not infrequently expressed with a profound conviction of which only the hyperenthusiast is capable. The sincereity of such conclusions is usually above suspicion, but the falsity of the deduction nevertheless remains. If the results are interpreted by a careful consideration of the facts and with the thought ever in mind that biologic processes are constantly varying and no one experiment can possibly reveal all the truth on any proposition, it will be found that most experimental results constitute suggestive evidence rather than absolute proof.

SUMMARY

Finally, the question of the pathologist and poultry disease may be summarized as follows:

1. Every research project concerning disease is either wholly or in part in the field of pathology and a pathologist should be consulted in all research pertaining to disease.

2. The qualifications of a pathologist are exacting and they require special aptitude, training and long experience to meet the requirements satisfactorily.

3. Where possible the problems of poultry disease should be attacked by coöperative effort, since more reliable information can be obtained by group effort in certain problems than by a single individual.

4. The cause of death of all animals in every experiment should be sought. This is a task for which only the pathologist is qualified.

5. Conclusions should be carefully arrived at, based on the actual facts revealed and judiciously stated.

The increasing importance of the poultry industry, the intensive husbandry practiced and the ever-present threat of disaster from an epizoötic disease would seem to justify the closest coöperation between the biologic sciences in controlling the losses, many of which are truly preventable. The geneticist, the biochemist, the parasitologist, the bacteriologist and the pathologist are each motivated by the same impulse and if their collective efforts could be successfully marshalled under the united banner of coöperation, diseases among poultry could, within a decade, be reduced to a minimum.

Doctor DeVine Officiates as Horse Show Veterinarian for Twenty-fifth Year

Dr. J. F. DeVine, of Goshen, N. Y., continues to maintain his deep interest in the horse. He officiated as judge of the saddle horses at the twelfth annual Horse Show of the Watchung Riding and Driving Club, at Summit, N. J., May 21-22, 1938. Dr. Howard E. Winter, of North Plainfield, N. J., and Dr. A. E. Robinson, of Madison, N. J., were the official veterinarians to the show.

The Tuxedo Horse Show was held at Tuxedo Park, N. Y., June 3-4. It is one of the best two-day events in the East and is notable for its incidental social activities. This year Dr. DeVine officiated as veterinarian at this elite show for the twenty-fifth time—quite a record. Forty-eight classes were judged at Tuxedo during the two days, with hunters and jumpers predominating.

Cocker Spaniels Lead

During the year 1937, the American Kennel Club registered 15,110 Cocker spaniels, almost as many as the combined registrations of Boston terriers (9,400) and Scottish terriers (7,707), in second and third places, respectively. Other breeds that made good showings included beagles, greyhounds, Pekingese, springer spaniels, chows and dachshunds.

Public Health Aspects of Mastitis*

By DAVID J. DAVIS, *Dean*
College of Medicine, University of Illinois, Chicago, Ill.

There are two groups of human, milk-borne infections which come from the cow. One group comes from the interior of the animal and includes tuberculosis, anthrax, undulant fever, and paratyphoid. The causative organisms may pass directly through the udder, without localization, and appear in the milk. At times, however, the organisms may localize in the udder, causing a definite mastitis, as not infrequently occurs in tuberculosis and undulant fever.

The second group of human, milk-borne infections includes primarily three diseases in man, namely, septic sore throat, scarlet fever, and staphylococcus toxin food-poisoning. The causative organisms in this group usually enter the udder through the lactiferous duct of the teat from the outside. It is to this group that I wish to call your attention and to refer specifically to the relation of these infections to bovine mastitis.

SEPTIC SORE THROAT

Septic sore throat is primarily an epidemic disease. The first outbreak on record appeared in England, in 1875. Since that date, over 100 epidemics have been reported in Great Britain. A few outbreaks also have appeared in Scandinavia and Denmark. In the United States, these epidemics have been appearing for at least 30 years, and still continue. Most of them have occurred in the Atlantic states, especially in New York and Massachusetts. A number have appeared in the Central West and two outbreaks on the Pacific Coast. According to the reports of the United States Public Health Service, milk-borne septic sore throat has been, for some years, the most prevalent milk-borne disease in this country.

The most common cause of mastitis in cows is a streptococcus of bovine origin. There is no evidence that this organism is dangerous to human beings. Occasionally, however, in mastitis in cows a streptococcus is found that is hemolytic in character and in general has the properties of the dangerous human type. It is these streptococci, fortunately rarely found in cows, which are responsible for outbreaks of septic sore throat.

In studying carefully the outbreaks of septic sore throat, it was early recognized that they were milk-borne and that it was often possible to trace the source of the infection directly to a definite herd and, indeed, to a single infected cow in the herd. When such suspected animals were removed, these epidemics invariably ceased.

The question naturally arose how these virulent organisms of the human type entered the cow's udder. Experiments made years ago indicated that streptococci of human origin, if planted or smeared on the teat of the cow, would pass upward through the column of milk in the lactiferous duct and grow in the milk-cisterns of the udder, there causing a localized mastitis. We may assume, therefore, that a milker suffering from septic sore throat, through contaminated hands, may be responsible for infecting a cow, in this manner originating an epidemic. The experimental production of mastitis with streptococci of human origin has been confirmed by a number of investigators.

SCARLET FEVER

Scarlet fever is a human disease closely related in some ways to septic sore throat. Milk-borne outbreaks of scarlet fever have been known for many years. It has been assumed that human carriers of the causal streptococci contaminated the milk and thus the disease was spread. There is good reason to believe that, at times, scarlet fever is spread like septic sore throat; that is, the streptococci gain access to the udder through the teat-canal, infecting the milk which, when consumed by the public, gives rise to an outbreak of the disease. Several

*Presented at the eighteenth annual veterinary conference, University of Illinois, Urbana, Ill., October 7-9, 1937.

epidemics are now on record where the source was traced to cows suffering with mastitis caused by the scarlet-fever streptococcus.

A notable epidemic of scarlet fever traced to the udder of a cow was reported several years ago by Jones and Little in New Jersey. Two hundred and two cases of scarlet fever appeared in this outbreak. Last spring, in New York, an outbreak of nine cases of scarlet fever was traced to a cow in a certain town. This cow was sold to a cattle-dealer and then pasesd through the hands of five different farmers. It was shown that this same cow, months later, was responsible for a second outbreak of six cases of scarlet fever. Such an experience indicates not only that scarlet fever may be transmitted through the udder, but that the organism may persist in one animal for at least several months.

Public health experience now with scarlet fever and also with septic sore throat reveals clearly that in every outbreak the milk supply should be suspected and a careful investigation made to determine whether or not the source might be the udder of an infected cow.

FOOD-POISONING

Food-poisoning, due to staphylococci, has been suspected for many years. In 1914, for example, Barber described cases of food-poisoning in the Philippines caused by a staphylococcus toxin. Several years ago, work done in the Department of Dairy Husbandry of the University of Illinois indicated that certain micrococci, found in milk, would cause an enteritis in animals and humans when grown in milk.

Our attention was forcibly drawn to this problem three years ago, when an outbreak of about 250 cases of food-poisoning occurred in a school in Tennessee. This outbreak was traced to two cows in the herd supplying the school with milk. Both animals were suffering with a staphylococcus mastitis. Since then, a number of similar outbreaks have been reported; one, for example, in Illinois, at Enfield, where 20 cases of enteritis were traced to milk. Experimentally it has been shown that certain strains of staphylococci are able to produce a poison which, when given to humans or animals, causes an enteritis comparable to these reported milk-borne outbreaks.

Staphylococci of various kinds are frequently found in the udder. Some may exist there harmlessly, while others may be responsible for a mild mastitis or for a very severe and gangrenous type. As yet a definite specific variety of staphylococci has not been shown to be responsible for the outbreaks.

The Division of Animal Pathology of the University of Illinois is now experimenting on cows to determine how readily staphylococci of human origin may pass from the outside through the lactiferous duct into the udder. I understand that the experiments have not as yet been completed, but the evidence thus far indicates that, under certain conditions, staphylococci may ascend the duct, although not so readily as do the streptococci of human origin.

From the standpoint of public health, these three diseases (septic sore throat, scarlet fever, and food-poisoning), related as they are to mastitis in cows, present serious problems. It should be pointed out, however, that mastitis in cows caused by bacteria of human origin is rare, yet taking the country as a whole, several udder-borne outbreaks continue to appear each year.

Years ago, a number of epidemics occurred in large cities. Now, practically all outbreaks appear in communities of 5,000 population or less; no doubt due to the fact that practically all milk used in the large cities is pasteurized.

In conclusion, I wish to emphasize that the diseases, mentioned above, direct our attention to the importance of medical men and veterinarians meeting together, as we are doing today, to discuss these problems. The veterinarian has the opportunity of seeing infected cows in the early stages and may be in a position to prevent or check an epidemic. Medical men and public health officials, on the other hand, may become aware of the disease only after it has gained considerable headway. The close coöperation of these two groups, therefore, is necessary to protect the public against such diseases as we have considered.

The Dog Flea as a Causative Agent in Summer Eczema*

By ALFRED KISSILEFF, *Flourtown, Pa.*

Summer eczema or, more accurately termed, summer dermatitis in dogs is an acute and, later, a chronic inflammation of the skin associated with hyperemia, exudation and itching.[1] Sometimes, in the course of the inflammation, nodules and vesicles develop with loss of the hair and prolonged scaly excoriation. The disease appears first on the back, at the base of the spine, and gradually spreads up to the shoulders. It is most prevalent in the summer months, tending to disappear by mid-winter, but reappearing the following summer. It occurs in practically every known breed but seems to be more common and more persistent in house pets,[2] especially the wire-haired breeds.

OBJECTIVE SYMPTOMS

The most prominent symptom observed is itching, which is present from the very beginning and continues throughout the course, if untreated. The itching is evidenced by strenuous and repeated efforts of the patient to relieve himself by biting or scratching at the sensitive region. Following the biting or scratching, a local hyperemia develops, and, if the friction to the skin is severe, there is bleeding and serous exudation. If the region is not disturbed again, a scab forms and healing takes place. If further traumatized, the scab is partly or wholly destroyed before it accomplishes its purpose and the healing process must begin all over again. The frequent interruption of this healing process finally results in the development of a scaly, inflamed and ill-smelling skin surface, clinically described as an eczema or, more correctly, a dermatitis.

Summer eczema has also been termed a symptom-complex; the scratching opens the lesion before complete healing is accomplished, resulting in more tissue damage which gives rise to still more irritation, constituting what is known as a vicious cycle.[3]

An important feature in the development of the disease is the consistent regularity in the series of symptoms. The inflammatory lesions appear after the skin has been mechanically injured by biting and scratching and not before. Observation of the early stages of the disease shows that the appearance of an active lesion is invariably preceded by frequent and prolonged biting at the sensitive area.

The prolongation of this cycle is accompanied by the usual tissue response to incessant irritation. There is thickening and wrinkling of the skin, dysfunction of the sebaceous glands and, later, exfoliation and pigmentation.

ETIOLOGICAL AGENTS

The literature[1, 2, 4, 5] refers to various agents which have been suspected of being causes of summer eczema. A combination of factors or a single factor is often alleged to be a direct cause or a contributing cause of the development of skin lesions which fall under the general heading of eczema. Among these are poor diet, food allergy, frequent baths, worms, nervousness, kidney disease, intestinal disease, focal infection and heredity, all of which, either alone or in combination, can influence the course and severity of a case of summer eczema but not one of these agents, to the author's knowledge, has ever been clearly demonstrated to be the primary causative agent responsible for the itching which ushers in the disease. It has been shown by Klauder and Brown[6] that certain carbohydrate diets will increase the sensitivity of the skin to local irritants, but the diet itself did not initiate itching. The local irritant must be present before the skin changes are manifested. In the experiments of Klauder and Brown, it was necessary to apply irritant drugs to the

*Presented at the monthly meeting of the Keystone Veterinary Medical Association, Philadelphia, Pa., December 15, 1937.

skin before changes in skin sensitivity could be perceived.

The theory that food allergy was the cause of eczema was advanced by Schnelle[5] through an experiment with two dogs known to be allergic to certain foods. The dogs developed lesions of eczema while on a diet containing these foods.

When the foods were discontinued and a sulfur lotion applied, recovery took place. Had the removal of the offending foods been the sole therapeutic measure employed, the theory would be quite justifiable. However, a sulfur lotion was applied, which leaves some room for doubt as to which measure prompted recovery. It will be recalled that sulfur has been used with good results in eczemas for many years. There are other reasons for doubting that food allergy is the primary cause of summer eczema, the most noteworthy being the spontaneous disappearance of the symptoms in cold weather, even when the diet remains unchanged. The localization of summer eczema, especially in the region on the back near the base of the tail, also points definitely away from the theory that the disease is purely a food allergy. The eczema in the human which results from ingestion of certain food proteins is not characterized by any similar regional preference.

These facts, moreover, tend to disprove the supposition that other internal disorders, kidney disease, intestinal disease and worms can cause summer eczema. It is true that such devitalizing influences impede the progress of the natural healing forces and will necessarily prolong the duration of existing disease whether it be skin disease or disease of any other organ.

Frequent bathing with soap is injurious to the skin in some dogs, while in others it is apparently harmless.

The inheritance of a predisposition to summer eczema is not altogether unlikely. It is a recognized fact that the skin in different individuals varies to a great extent when exposed to the same irritant.[6] For example, in the human, some individuals, upon exposure to the direct rays of the sun, will contract a severe burn while others, upon equal exposure, suffer no ill effect. It should be remembered that in this instance, the avoidance of the harmful external influence will prevent the development of subsequent injury despite predisposition. It is not uncommon to find that, when two dogs in the same house are kept under identical conditions, one will develop summer eczema while the other will not. It can be said that one dog is endowed with some peculiar resistance to the disease or the other is afflicted with some peculiar weakness or predisposition to it. No matter which explanation is more acceptable, the fact remains that there does exist a clearly recognizable difference in individual susceptibility with the likelihood of heredity playing some part.

There is still, however, the main point to be reckoned with and that is the agent or influence which instigates the itching sensation early in the disease and perpetuates it as the disease progresses.

An unusual sensitivity of the author to flea bites aroused the suspicion that the dog flea might be this external influence or exciting agent which initiated and established the series of symptoms leading to the development of the lesions of summer eczema in dogs which were likewise sensitive.

Inquiries made of colleagues revealed that many veterinarians were annoyed by fleas to a mild or severe degree, while some were not sensitive at all.

The reason for this difference is not well understood but there are these two groups, the sensitive and the non-sensitive, and it can be assumed that skin sensitivity is definitely of a latent nature and the actual display of this sensitivity is dependent upon the introduction of an outside irritant which in this case is the flea.

STUDIES OF THE DOG FLEA

The dog flea (*Ctenocephalus canis*) is a common skin parasite of dogs and is capable of inflicting an extremely irritating "bite." The itching sensation which accompanies a flea bite is thought to be due to some toxic principle injected by the flea during the act of biting.[7] Fleas are most annoying during the summer months, when they are most active. The higher activity

in summer is due mainly to high temperature, which brings about an increase in metabolism in a rather indirect manner. According to Wigglesworth,[8] the respiratory openings of insects, including fleas, are provided with occlusive mechanisms which are normally kept closed, being opened only just enough to keep the insect supplied with oxygen. With a rise in temperature they are widely dilated, increasing the oxygen supply and the rate of metabolism. With a continued increase in metabolism, as in summer, there is a stimulation of breeding activity which demands a heavier food requirement and consequently there is a decided increase in the frequency of biting. This frequency decreases as cooler weather comes on and when the outside temperature falls below 50° F., fleas show very little inclination to bite. Fleas do not die off entirely during the winter months, but merely become less active.

The increased frequency of biting in hot weather not only causes increased irritation by virtue of the additional bites inflicted, but also has the effect of reëstablishing the itching sensation in nearby bites that may be several days old. This fact was noted during an experiment to determine how long the effect of a flea bite lasted. The writer permitted fleas to bite the forearm in a line from the wrist to the elbow. Each bite was marked by a red wheal raising in a few minutes. It was found that the itching sensation began about 30 seconds after the flea settled and the itch persisted for as long as three hours, after which it disappeared. However, when a fresh bite was inflicted in the same vicinity, the sensation returned in the old bites with fully as much intensity as when first inflicted. Thus, even after the initial sensation of itching had subsided from one flea bite, another bite in the vicinity aroused itching in two foci instead of one.

It was also found that after the itching of a bite had subsided, massage of the area with the finger-tips brought about a return of the itching to its former intensity. After repeated trials, it was found to be clearly evident that the itching sensation of a flea bite, although apparently disappearing after three hours, was actually latent and could be promptly revived even as late as the fifth day after it was inflicted.

It can readily be seen, therefore, that when the frequency of biting reaches what might be termed an over-lapping tendency, the amount of itching is increased to a point far beyond a directly proportional degree. Furthermore, the mechanical stimulus of rubbing or scratching of one bite arouses itching in as many places as there are other recent bites nearby which would ordinarily have ceased itching. It was concluded that, with increasing frequency of biting, the skin becomes increasingly sensitive until a stage is reached where a single flea bite creates a fulminant reaction.

There was sufficient reason to believe that the skin reaction in sensitive dogs might be of a similar nature. To determine this, two dogs were selected for making tests.* The first was a Scotch terrier female, which had recently recovered from an attack of summer eczema of two months standing. The second was an English setter female, which had no history of eczema but harbored fleas without any signs of irritation from their presence.

The Scotch terrier was clipped over the back and observed closely for ten days to make sure that no skin irritation was present to confuse the results. The dog was in good physical condition and there was no evidence of internal disease or parasites. The diet consisted of straight raw beef. On the tenth day, the skin being normal, five fleas which had been previously starved in a bottle were allowed to bite the dog in the region over the left hip. Then the fleas were killed and the dog forcibly restrained to prevent scratching or biting. During the first half-hour, she made repeated efforts to turn around and bite at the hip but at the end of three hours, when released, there did not appear to be any itching present. The area was then rubbed gently with the finger, whereupon the dog turned and began biting herself savagely until a raw wet patch appeared. The rubbing was repeated at intervals and on each occasion the dog showed

*These tests were conducted during the months of August, September and October.

evidence of intense itching. On the following day, the area still responded to the rubbing, which caused a return of the itching very quickly. By the end of the second day, the region took on the appearance of a typical lesion of summer eczema. It was observed that itching was revived whenever the area was disturbed even gently, but when left alone for several hours, the itching subsided.

On the third day, the area over the right hip was exposed to biting fleas in the same manner as described before. This time the dog was not restrained and was seen to bite at both hips with equal vigor. Rubbing either hip with the finger excited the itch in the opposite hip as well as in the one massaged. The itching gradually diminished when the parts were left undisturbed and by the eighth day the hip was entirely healed except for a few small scales and the right hip was loosely covered with large, thin transparent scabs, beneath which was a fresh healthy skin surface.

Repetition of the same experiment on the same dog brought identical results. As long as the dog was kept entirely free of fleas, no skin lesions appeared, but immediately following even a single flea bite, an inflamed spot could be generated.

The same experiment was performed on the English setter, which had no previous history of eczema in spite of the presence of numerous fleas. The dog was dusted thoroughly with a 1.25 per cent rotenone flea powder and kept in a clean cage for two days after the powder and dead fleas had been brushed out. The clipping and the introduction of biting fleas was carried out in the same manner as described with the Scotch terrier.

Except for an occasional glance at the flea-bitten parts, the setter seemed totally unaware of the presence of the bites and was not in the least annoyed by rubbing of the parts with the finger. Daily attempts to produce a lesion by applying fleas to the same spot resulted in the appearance of a reddish discoloration of the hair near the roots but failed to excite any active inflammation.

The difference in the skin reactions to the same irritant, as shown in these two dogs, may or may not be of hereditary origin. However, it is not the concern of this paper to attempt to explain the cause but rather to emphasize that there is this difference in dogs as well as in other animals.

To rule out the possibility that these were but two exceptional cases, careful notes were made on all office patients examined during the period from August 1, 1936, to August 31, 1936, and a comparison of the relationship of the incidence of fleas to the incidence of summer eczema was drawn. A total of 45 dogs was examined. Only five were found upon which no fleas could be detected. Of the remaining, 18 had distinct lesions of summer eczema to some extent and 22 did not. The five dogs found to be free from fleas showed no signs of skin irritation and gave no history of scratching.

Since this number of dogs could not be considered large enough to be representative, the notations were carried further, up to August 1, 1937, a period of one year. Of a total number of 480 dogs examined, 64 were found to be entirely free from fleas. It was observed that not one of these 64 dogs showed any lesions of summer eczema or gave any history of the disease. In the remaining 416 dogs, 279 were found to be harboring fleas with no irritation, 60 had distinct lesions of summer eczema and 77 gave a history of the disease, making a total of 137 which were known to be subject to it.

The significance of these figures is obvious. Of the 64 cases recorded as free from fleas, not one had any trace or any history of summer eczema. Of the 137 dogs having eczema or a history of it, every one had fleas.

It was also noted that the season of the year bore no relationship to the number of cases on which fleas were found. The number of fleas per dog seemed to be smaller in winter than in summer but they were present nevertheless the entire year.*

*This may have been due in part to the unusually mild winter of 1936-1937 in this locality (Montgomery County, Pennsylvania).

These observations suggest that: 1. The disease, summer eczema, occurs only in a certain number (about 15 per cent) of those dogs which harbor fleas. 2. Those dogs which are free from fleas do not develop summer eczema.

CASE REPORTS

The following case reports demonstrate that the disease can be eliminated simply by eliminating the fleas. A total of 30 cases were treated successfully along the lines described in the case reports, but to avoid repetition only two are given here.

Case 1: Male Scotch terrier, nine years old, with history of eczema each summer for nine successive years. Was presented for examination on July 20, 1936. A routine physical examination showed no indication of any internal disorder, and no parasite ova were found on fecal examination. The skin over the back was denuded of hair from the shoulder back to and including the tail. There were slate-colored wrinkled patches over the hips, and anteriorly there were numerous scabs and some bleeding areas near the shoulders. Fleas were present, but not in any great abundance. The owner stated that the dog spent most of his time in the house and was fed mainly on meat with a few left-over scraps from the table.

A visit to the house was made and the owner was advised to employ an expert exterminating company to rid the house of fleas. Strong persuasion was necessary to convince the man that this measure was part of the treatment. He reasoned that the disease was incurable because the dog had suffered with it every summer of his life in spite of many patient treatments, and believed that the dog should be destroyed. After some deliberation, he agreed to follow the advice and the dog was hospitalized for ten days. During this time treatment consisted of killing the fleas on the dog and applying a phenol alcohol boric acid solution to the sore spots for the first three days, after which no more medication was used. The dog was sent home with the skin fairly well healed. Home treatment of occasional dusting with flea powder was recommended and the diet was not changed. The dog was examined twice during the month of August, and there was no return of the scratching, recovery being complete by August 30.

On September 3, the dog was left at a kennel to be groomed, and was found to be actively scratching again on the following day. Examination showed that fleas were again present, presumably picked up at the kennel. Daily application of flea powder checked the scratching, and after five days, the itching had completely subsided. No further outbreak occurred for the balance of the year 1936. During the summer of 1937, at the first sign of any itchiness, the owner applied flea powder diligently, and the skin remained normal the entire season.

Case 2: A small, female terrier, three years old, with a history of eczema every summer, was presented for examination on July 10, 1936. The diet had been mostly table scraps. Physical examination showed no evidence of internal disease and no worms. The skin was practically denuded of hair and over the back there were large inflamed patches of skin, occasional thick scabs, and some bleeding places. An offensive, rancid odor was present. About a dozen fleas were found and removed. The owner stated that the dog slept in the cellar, which had a dirt floor. After the place was visited, it was decided that the best plan would be to build an outside pen for the dog some distance from the house. The dog was hospitalized while the pen was being constructed.

Treatment consisted of a single complete application of a phenol alcohol boric acid solution. The dog was installed in her new quarters five days later, after the dog-house had been heavily dusted with flea powder. When examined again, on August 1, the skin was free from any signs of inflammation, but there was a heavy dandruff present. Brushing of the coat seemed to increase the dandruff rather than get rid of it, so it was advised to leave the coat strictly alone. An uneventful recovery followed and, by September 1, the back was well covered with hair, and the skin was

healthy in appearance. The dog was kept out in the pen during the winter of 1936-37. The summer of 1937 did not bring on a recurrence of the disease as did the previous summers. At the time of the last examination, on October 1, 1937, the skin was normal and the owner stated that the dog scratched during the summer only on rare occasions. No changes in the diet were made, the dog being fed table scraps the whole year.

These two cases illustrate the general principles followed in the management of the 30 cases mentioned previously. It was not always possible to handle every case similarly because of the variety of conditions encountered in each individual household, but by directing the utmost energy toward controlling the fleas, it was found that summer eczema could be successfully controlled without the use of medicine or special dieting. This does not mean to say that medical treatment of summer eczema is without its merits. Most of the local applications in common use generally give satisfactory results, especially if the dog is hospitalized, and the hospital is not infested with fleas.

It is quite often the case, however, that after a dog has been discharged as "cured," another outbreak occurs shortly after the dog is sent home. Continuation of local treatment at home also meets with more or less failure, principally because the treatment is directed at the local symptoms instead of the cause. Where external medicines are applied regularly in generous quantities, the results are much better, the reason for this being that nearly all skin lotions contain one or more chemicals which possess strong insecticidal or insect-repellant properties. Examples are phenol, alcohol, sulfur, creolin, camphor, and petroleum products, all of which are decidedly distasteful to fleas. Internally, preparations of sulfur also aid in repelling fleas by means of the elimination of sulfur compounds through the skin.[9]

Efficient control and complete extermination of fleas, however, is by no means an easy matter to be dealt with lightly. All practitioners are fully aware of the importance of controlling fleas in treating an outcase of summer eczema, but the usual procedure of dispensing a can of flea powder and lettting the matter stand does not produce results. The quality of the powder and the manner in which it is used determine to a great extent the success or failure of the treatment.

The quality of the powder is often overlooked, very few powders being as efficient as the manufacturers claim them to be. The fact that a can bears the name, "flea powder," and a statement of the active ingredients, is no proof of its value as an insecticide. Contrary to popular beliefs, those powders containing pyrethrum are especially unreliable. Pyrethrum does not kill fleas, but merely stupefies them temporarily.[7] On the other hand, rotenone, the active principle of derris, is actually fatal to fleas, providing it comes in contact with them. A combination of pyrethrum and derris is a useless one because the pyrethrum causes the fleas to fall off the dog before sufficient contact with the derris has been made, and the purpose of the powder is thereby defeated. The fleas revive after a short time and return to the dog after he has shaken off most of the powder.

The writer tested the efficiency of six different flea powders from well-known veterinary supply houses, and found only one to be entirely satisfactory. The tests were conducted by shaking a number of fleas in a test-tube partly filled with the powder, and then dumping the fleas in an empty jar. If live fleas were found in the jar after 24 hours, the powder was considered inferior. The powder which actually killed all of the fleas was an open formula mixture of 31.25 per cent derris and 68.75 per cent powdered talc. The other powders were various mixtures of derris, pyrethrum, sodium fluoride, talc, gypsum, and unknown vehicles. It was noted that, on the powders where the formula was stated, the amount of derris was invariably sacrificed by the inclusion of other so-called active ingredients.

The manner in which flea powder is applied to the dog also has much to do with

the anticipated results. Powders do not remain for a very long period on the dog because of the tendency of the hair-coat to work dust particles away from the skin. In order to reach the fleas and kill them, it is necessary to apply the powder directly to the skin, preferably with a powder-blower. The ordinary shaker-top can method is not only a wasteful means of applying flea powder, but is very unsatisfactory. The daily application of flea powder in the dog-kennel or dog-bed is of as much or more importance than the application to the dog, since it will be found in many instances that the bed is infested with fleas in immature stages of development.

It cannot be too earnestly emphasized that the presence of even a few fleas will cause as much disturbance, especially in wire-haired terriers, as a far greater number.

CONCLUSIONS

1. It is believed that the disease, summer eczema, occurs only in certain dogs which are sensitive to flea bites, and the appearance of the disease is entirely dependent upon the presence of fleas.

2. The clinical picture of summer eczema is for the most part the symptoms of self-inflicted traumata in various stages of healing.

3. The bite of the dog flea (*Ctenocephalus canis*) is considered to be the primary etiological agent responsible for the inception and continuation of the disease.

4. The disease disappears in cold weather coincidentally with the moderation in the activity of fleas.

5. It is believed that the various lotions used in the external treatment of summer eczema owe much of their efficacy to the flea-repellant chemicals contained in them.

6. There is room for considerable improvement in the manufacture of some of the flea powders sold to veterinarians. A flea powder containing only sufficient derris root as the active ingredient was found to be far superior to five powders containing active ingredients in combination.

7. The treatment and prevention of summer eczema in dogs is dependent more upon the elimination of fleas than upon the administration of medicine.

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Doctor Bergman Honored

President-Elect Bergman has been appointed a member of the Honorary Committee of the Tenth International Congress of Military Medicine and Pharmacy, which will be held in Washington, D. C., May 7-15, 1939. This appointment was made by Major General C. R. Reynolds, the Surgeon General of the U. S. Army, who is president of the Congress.

The International Congress of Military Medicine and Pharmacy had its origin in the meetings of the Consulting Surgeons of the Inter-Allied Armies in the West in the World War and has convened biennially during the past 18 years. The meetings usually are attended by delegates from 30 to 40 nations and have been most important in advancing the cause of military medicine, sanitation, and in the care of the sick and wounded in war. These meetings are also extremely important in furthering and cementing international coöperation and amity among the nations represented. We believe that the Tenth International Congress will be the first to have official representation from the American Veterinary Medical Association.

Scopolamine Action in the Horse*

By A. HENRY CRAIGE, JR., *Philadelphia, Pa.*
School of Veterinary Medicine, University of Pennsylvania

The use of scopolamine for a supposed narcotizing action on the horse has been suggested from time to time in the past without any direct proof, to our knowledge, that the drug merits regard on this score. Although generally acknowledged to possess definite sedative qualities for man, the limited data in reference to central effects on the horse fail to support the assumption that the action is similar to that in man. On the contrary, the available information leads rather directly and unmistakably to the conclusion that scopolamine is characteristically excitant for the horse.

At best, scopolamine appears to be a mild and often deceptive agent. In man, where the sedative action is seen at its best, the hypnosis is often light; furthermore, symptoms of central excitation precede the stage of sleep in many humans, and occasionally the effect is entirely one of excitement.[1] On rats, Barlow found maximal depression to be slight, with hypnosis far from complete; also, he failed to reveal any preanesthetic value for scopolamine with nitrous oxide, nor could he prove any synergism in combinations with morphine, using the rat.[2]

It has been observed in the past that horses show a higher sensitivity to scopolamine than some of the smaller animals, a single experimental dose of 250 mg leading to death in a horse (Fröhner), as contrasted with the recovery of a small cat from an administration of 600 mg (Kobert), notwithstanding the difference in size of the two animals.[3] These are the results in a few isolated cases, and seem to summarize the literature on the action in the horse. The following series of tests is reported to demonstrate the therapeutic uses and limitation of the drug in horse practice, together with the dose requirements. In addition to the central effects toward which our primary interest has been directed in this study, we have followed the atropine-like peripheral actions, consisting of the suppression of salivary secretion, tachycardia, mydriasis, and diminished intestinal activity, among others. It is the writer's opinion that a more complete understanding of all the various actions of the drug should result in the discovery of many practical uses for it as a therapeutic agent.

TABLE I—*Horses used in the experiments.*

HORSE	WEIGHT (KG)	AGE	TYPE
1	350	Young	Thoroughbred
2	400	Young	Thoroughbred
3	450	Young	Hunter
25	375	Young	Thoroughbred
26	400	Young	Standardbred
27	450	Aged	Mixed
28	475	Aged	Chunk
29	425	Aged	Chunk

PROCEDURES

The experiments were carried out upon eight different horses, all in a normal, healthy condition, but varying in age and type (table I). The procedure during the period of observation consisted in preadministrative examinations over a period of one-half hour or more, followed by close scrutiny for at least one hour, and in a number of cases several hours after the administration. In these studies no attempt was made to follow any effects other than those readily ascertained by an examination to which the animals had been accustomed by previous months of similar handling. By this means the factor of psychic artifacts, the results of strange procedures, was reduced to a minimum; in fact, on the basis of numerous control studies, this factor can be eliminated as a practical consideration.

The crystalline salt, scopolamine hydrobromide, prepared by Merck and Co., Inc.,

*Received for publication, December 16, 1937.

was used throughout these experiments. Freshly prepared solutions were administered by the subcutaneous route in all instances, with the exception of experiment 16 (intravenous). All references to dosage in this report are to the salt, as a total dose.

Effect upon the central nervous system was judged largely from changes in the attitude of the animal. It may be noted (table II) that doses of 6 mg elicited excitement in all instances and that increases above this were attended by a corresponding increase in violence of the symptoms. Restless movement about the stall, difficulty in restraining the animal, and exaggerated response to the outside stimuli that arise from unusual sights, odors, and body contacts, were all characteristic of this excitement. Symptoms such as these were not observed with doses of 5 mg and less; neither were there recognizable indications of central depression.

TABLE II—*Central effects of scopolamine hydrobromide in horses.*

EXPERIMENT	TOTAL DOSE* (MG)	HORSE	GENERAL SYMPTOMS
1	0.5	25	None
2	1.0	26	None
3	1.5	1	None
4	2.0	25	None
5	2.0	26	None
6	2.0	28	None
7	2.0	29	None
8	3.0	2	None
9	5.0	25	None
10	5.0	26	None
11	6.0	3	Moderate excitement
12	6.0	25	Moderate excitement
13	6.0	28	Moderate excitement
14	6.0	29	Moderate excitement
15	7.0	26	Marked excitement
16	8.0	27	Violent excitement
17	13.0	1	Violent excitement

*Scopolamine administered subcutaneously in all cases except experiment 16, in which the drug was given intravenously.

Peripheral actions were studied in the light of variations in the function of organs characteristically affected by parasympathetic intervention. Decrease in the normal frequency and diminution in the volume of intestinal sounds, as detected by periodic auscultation of the flank, dilatation of the pupils, dryness of the mouth, and acceleration of the pulse, were the criteria employed to identify the drug action. A description of the standard technique employed in taking these observation is presented elsewhere.[4]

RESULTS

As may be noted, by glancing at table II, the only cerebral effect observed was that of excitement. Doses of less than 6 mg appeared incapable of eliciting any general action. Increases beyond this level resulted in increased intensity of the excitement.

If any comparison can be drawn from observation of the symptoms of scopolamine excitement and morphine excitement in the horse, it would be that the higher cerebral centers are more particularly affected by the former, while with the latter the lower, subcortical centers are stimulated and the higher centers are depressed. With effective doses of scopolamine, the animal shows evidence of a general psychic and reflex exaltation. Intensified reactions to unusual sights, sounds and odors, and excessive reflexes upon touching the animal, all characterize scopolamine excitement; withal the animal tends to remain quiet and alert until disturbed.

As is generally known, the picture in morphine excitement is quite different; the animal is seldom more responsive than normal to reflex-evoking stimuli of any type, and more commonly exhibits a definite sluggishness and even indifference to unusual psychic influences, proddings, and other agents ordinarily annoying. At the same time, he shows a strong tendency to move restlessly about the stall, in a steady relentless course, often with a look of unmistakable dullness on the face. A further contrast between the two drugs is brought out in the lack of depression symptoms with subexcitant doses of scopolamine, as against the definite dullness elicited by subexcitant doses of morphine.

Variations in the activity of certain peripheral organs following the scopolamine administrations are summarized in table III. It may be noted that pulse frequency was definitely increased in three out of

four cases at 2 mg, while the acceleration of two beats to the minute in experiment three was not considered significant. The same may be said for effects on the pupil. Periodic examination of the buccal mucous membrane revealed suppression of salivary secretion with doses of 1 mg. Peristaltic motility, reckoned from two-minute stethoscope examinations in the right flank region at 15-minute intervals throughout the period of study, was diminished with all doses. Complete cessation of abdominal sounds was observed with doses of 1.5 mg (table III), although in isolated instances (experiments 7 and 17) the suppression, while pronounced, was not complete.

The effect upon body temperature constitutes another aspect for comparison between morphine and scopolamine. As has been previously indicated, morphine excitement is invariably attended by temperature increases of 1° F. or more and subexcitant doses are more commonly associated with temperature rises than with falls, in the horse.[4] Scopolamine in no case engendered 1° of rise. The violent excitement of experiment 15 was attended by a temperature fall of 1°; experiment 11, by a fall of 0.4°;

TABLE III—*Peripheral effects of scopolamine hydrobromide in horses.*

EXPERIMENT	DOSE (MG)	PULSE*	SECRETIONS†	PUPIL‡	PERISTALSIS§
1	0.5	0	Normal	0	(—)
2	1.0	0	Drying	0	—
3	1.5	+ 2	Drying	+2	— —
4	2.0	0	Drying	0	— —
5	2.0	+ 4	Dry	+2	— —
6	2.0	+15	Dry	+3	— —
7	2.0	+ 7	Dry	+2	—
8	3.0	+ 9	Dry	+6	— —
9	5.0	+26	Dry	+1	— —
10	5.0	+ 7	Dry	+3	— —
11	6.0	+18	Dry	+6	— —
12	6.0	+49	Dry	+6	— —
13	6.0	+37	Dry	+4	— —
14	6.0	+42	Dry	+2	— —
15	7.0	+24	Dry	+5	— —
16	8.0	+75	Dry	+9	— —
17	13.0	+ 6	Dry	+5	—

*Variations in pulse frequency, per minute. (†means increase.)
†State of the buccal mucosa.
‡Variations in the vertical diameter of the pupil, in millimeters.
§Peristaltic activity (number and volume of intestinal sounds): (—) = slight diminution; — = definite diminution, marked; — — = complete suppression.

TABLE IV—*Summary.*

DOSE (MG)	PERISTALSIS (DEPRESSION)	SECRETIONS (DRYING)	PUPIL (MYDRIASIS)	PULSE (ACCELERATION)	CENTRAL (EXCITEMENT)
0.5	(+)	—	—	—	—
1.0	+	+	—	—	—
1.5	+	+	+	—	—
2.0	+	+	+	+	—
3.0	+	+	+	+	—
5.0	+	+	+	+	—
6.0	+	+	+	+	+
7.0	+	+	+	+	+
8.0	+	+	+	+	+
13.0	+	+	+	+	+

— = no effect.
(+) = perhaps a slight effect.
+ = definite effect.

experiments 13 and 14, by rises of 0.4 and 0.3° respectively. With doses less than 6 mg a slight fall was noted in all cases where the temperature was studied.

No effect was noted consistently upon respiratory frequency with subexcitant doses; scopolamine excitement, however, was usually attended with an increase in the number of respiratory movements per minute.

TABLE V—*Subcutaneous dosage of scopolamine hydrobromide for various effects.*

DOSE		ACTION DESIRED
MILLIGRAMS	GRAIN	
0.5–1.0	1/120–1/60	Sedative to the intestine
1.0–1.5	1/60–1/45	Anti-sialogogue and suppression of mucous secretion (respiratory astringent)
1.5–2.0	1/45–1/30	Mydriatic
2.0–3.0	1/30–1/20	Accelerate heart; free it from vagal inhibition
6.0–8.0	1/10–1/8	Stimulate the central nervous system

SUMMARY

Scopolamine possesses a distinct excitant action for the horse, eliciting in small quantities, 6 mg (1/10 grain) of the hydrobromide subcutaneously, symptoms of excitement unmixed with dullness, differing in this and other respects from the action of morphine and its derivatives. Doses of scopolamine less than the minimal excitant dose failed to produce depression.

Various peripheral actions, analogous to those of atropine, may be initiated by subexcitant doses of scopolamine. From the above experimental results on normal animals, ranging in weight from 350 to 475 kg (ca. 775 to 1,050 lbs.), the subcutaneous doses shown in table V may be recommended.

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Poultry Regional Research Laboratory

Plans for a poultry regional research laboratory, to be established at East Lansing, Michigan, have been announced. According to Dr. J. R. Mohler, Chief of the U. S. Bureau of Animal Industry, the laboratory will be the coördinating unit and headquarters for a research program in which the experiment stations of 25 North Central and Northeastern states will coöperate.

One of the first problems to receive attention will be the development of effective control methods for fowl paralysis, a disease that is widely distributed and one that causes heavy losses, not only in farm flocks but on commercial poultry farms. It has been estimated that fowl paralysis accounts for about one-half of the $100,000,000 loss caused by poultry diseases in the North Central and Northeastern states.

Various theories have been advanced to explain the exact nature of fowl paralysis. Its cause is not known and no effective methods for its control have been developed. An attempt will be made to determine to what extent breeding for resistance to the disease can be successful. Related projects will be studies of the effects of different kinds of poultry management, including feeding practices. The relationship of parasitism to the incidence of the disease will receive serious attention.

The U. S. Civil Service Commission has announced examinations to be held for the position of Principal Poultry Husbandman, to serve as Director of the Poultry Regional Research Laboratory, at a salary of $5,600 per year. Other examinations are for the purpose of securing eligibles for the positions of Senior Veterinarian (poultry pathology), at $4,600 per year; Veterinarian (poultry pathology), at $3,800; Associate Veterinarian (poultry pathology), at $3,200, and Assistant Veterinarian (poultry pathology), at $2,600 per year.

Studies of a Malady in Sheep*

By LOUIS N. MORIN, *Clinton, Ill.*

History: The observations here recorded were made on 300 lambs, purchased on the general market. The flock appeared to be composed of animals from several sources. They had been on feed for about six weeks at the time of the disease onset. The quality of the feed was excellent and it was sufficient in quantity. The lambs were fat, well housed, and had received plenty of exercise. There was no history of any previous occurrence of a similar nature on this farm. The sanitary conditions were about average. The lambs were fed by the owner, who was an observant individual. He reported that, on the average, there had been about three new cases per day.

All animals affected during the first 14 days died. The number included some sacrificed for study. For the next three days, there was a gradual drop in the number of deaths and new cases, followed by a complete cessation of new cases and several recoveries. There was a constant syndrome throughout the period that the disease was under observation. In order that a careful study might be made, the owner marked each lamb as soon as the first symptoms appeared. The course of the disease in these marked animals proved the owner to be almost uncanny in his observations.

Progressive symptoms: These included the following: bilateral ophthalmia, without lachrymation; dullness, "pushing," "circling" and paralysis, terminating in death.

Postmortem: Many autopsies were performed. All of the carcasses were fat. Parasites were at a minimum in each case. There was no enteritis present and no pneumonia was observed. Bacteriological and pathological examinations made by the Division of Animal Pathology and Hygiene, Animal Pathology Laboratory, University of Illinois, proved positive for a Listerella-like organism, but negative for Pasteurella and filtrable virus.

Treatment: Liberal doses of hemorrhagic septicemia bacterin were administered early in the outbreak, before laboratory work was begun, but without results. Autogenous bacterins were given on two occasions, five days intervening between treatments. Recoveries were taking place and the new cases daily were diminishing in number before the autogenous bacterins were given, but the improvement came too long after the administration of the hemorrhagic septicemia bacterin to attribute the change to the use of the latter product. Further proof that the trouble was not hemorrhagic septicemia is found in the failure of the laboratory to find the organism of this disease.

Comment: Judging from the observations made in the field and the studies made in the laboratory to date, it appears that we were dealing with a cerebral infection, similar to, if not identical with, an outbreak of a disease in sheep recently reported by Jungherr,[1] of the Storrs, Connecticut, Agricultural Experiment Station. In the Connecticut outbreak, Jungherr isolated two ovine *Listerella* strains which were indistinguishable by cultural, agglutination and agglutinin-absorption tests from one ovine and two human stock strains. Jungherr stated that although the pathogenesis of the ovine disease was not entirely understood, it appeared that the *Listerella* genus played an important rôle as an etiological agent.

*Received for publication, March 4, 1938.

Rabies Ordinance

The village of Belleville, Mich., has adopted an ordinance requiring the licensing of dogs, in an effort to reduce the number of stray dogs and thereby eliminate a large part of the rabies menace. All dogs over six months of age must be licensed. The fee is $3.00 for all male dogs or unsexed females if not vaccinated against rabies. For females that have not been unsexed and are not vaccinated against rabies the fee is $5.00. For all vaccinated males and unsexed females the fee is $1.00, and for females that have been vaccinated but not unsexed the fee is $3.00.

[1]Jungherr, E.: Ovine encephalomyelitis associated with Listerella infection. Jour. A. V. M. A., xci (1937), n. s. 44 (1), pp. 73-86.

The Similarity Between the Flagellate of Turkey Trichomoniasis and T. Columbae in the Pigeon*

By ROBERT M. STABLER, *Philadelphia, Pa.*
Department of Zoölogy, University of Pennsylvania

IN 1930, Volkmar[1] described a disease of the upper digestive tract of turkeys which he stated was caused by a new species of Trichomonas, *T. diversa.* This parasite, never found in the gizzard, small or large intestine, was associated with a condition of which terminated in a free posterior flagellum.

More recently, Hawn[2] has redescribed this trichomonad disease in turkeys, giving a fuller, more complete account of the lesions. He maintains that the disease is

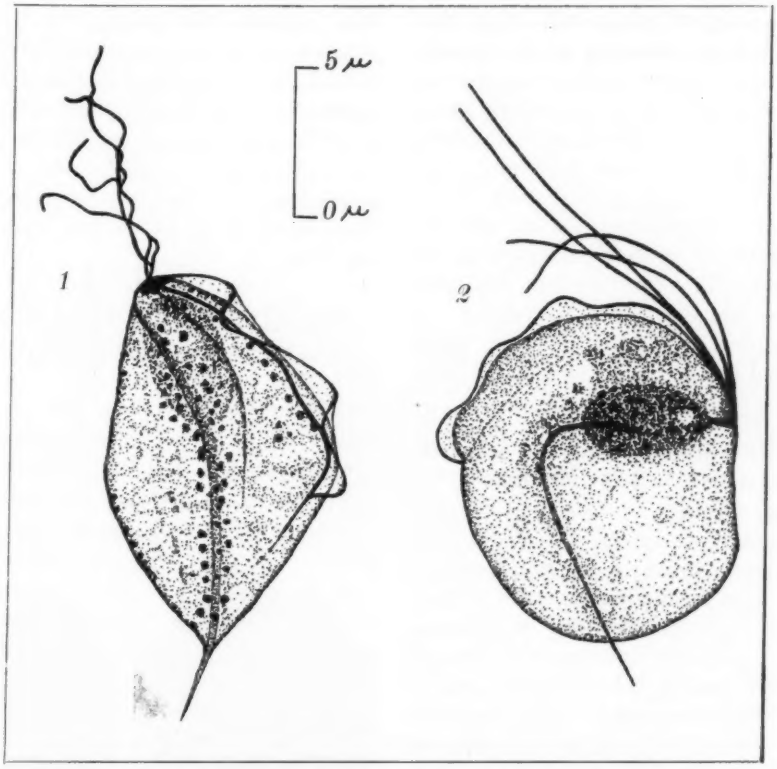

Fig. 1. No. *1* is a drawing of *Trichomonas columbae* from the pigeon. Material fixed in Schaudinn's fluid plus 5 per cent of glacial acetic acid and stained in Heidenhain's haematoxylin. No. *2* is of the same parasite, drawn from Dr. Hawn's smear of turkey trichomoniasis. Stained with Wright's stain.

characterized by a caseous, catarrhal involvement of the mucosa, which at times assumed such proportions as to occlude the lumen of the tract completely. Among other features, *T. diversa* was said to possess three anterior flagella and a two-thirds length undulating membrane, the margin due to *T. diversa,* yet disagrees with some of Volkmar's statements concerning the morphology of the organism. Hawn finds four anterior flagella to be characteristic and states that the marginal filament does not end in a posterior, trailing flagellum.

The writer, who was working with the so-called *T. columbae,* became suspicious

*Received for publication, April 11, 1938.

that the parasite of the turkeys and pigeons might be the same, partly because of the similarity of location in the host and partly because Hawn's description so closely fitted the pigeon flagellate. An attempt was made, therefore, to infect a negative turkey by smearing its mouth with material from that of a positive pigeon. The flagellates have been present in this turkey from that day to this (61 days) and it has not shown the slightest sign of illness. A week after this first bird became positive, cultures were made from it and a second negative turkey was given this material. The details of these experiments will be published elsewhere, but suffice it to say here that this second bird became infected, was extremely ill for nearly two weeks, recovered and has likewise remained positive for *Trichomonas* to the time of writing (54 days). Cultures from this latter bird were fed to a clean pigeon and a permanent infection of *T. columbae* was established which differed not the slightest from that possessed by the original pigeon. *T. columbae*, then, has been passed from pigeon direct to turkey; to culture and then to another turkey; again to culture and finally back to a clean pigeon.

Extensive efforts were then made to procure some type material of *T. diversa*. This is no longer available; what few slides were made are lost, broken or otherwise untraceable. Through the kindness of Dr. Hawn. a stained smear has been received, which was made "from the crop of a clinical case of Trichomoniasis" in the turkey and positively identified by him as *T. diversa*. An examination of this slide shows it to be of typical *T. columbae*. Figure 1 is a drawing of this organism from the pigeon and figure 2 is the same flagellate from Dr. Hawn's slide.

In conclusion, it is the writer's opinion that, despite the inability to procure type *T. diversa*, we are justified, on the evidence presented, in stating that this flagellate is synonymous with *T. columbae* and that the trichomonad disease in the turkey and in the pigeon are caused by one and the same organism, *Trichomonas columbae*, and that the pigeon is probably the ultimate source of infection.

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Seven Michigan Counties Under Quarantine for Rabies

With the placing of Berrien County, Michigan, under quarantine for rabies until August 29, seven counties in the state are now under such a quarantine. State Commissioner of Agriculture John B. Strange has issued a warning to owners of dogs to secure health certificates for their pets if they want to bring them into Michigan from other states. Michigan citizens who plan to take their dogs into other states must obtain health certificates from Dr. C. H. Clark, state veterinarian of Michigan.

Official Program of Congress Ready

The official program for the Thirteenth International Veterinary Congress, to be held at Zürich-Interlaken, Switzerland, in August, is now available for distribution. It contains, among other information, the organization of the Congress, a list of the national committees, program of the sessions, list of reporters, by-laws of the

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Congress, and schedule of receptions and excursions. Copies of the program may be obtained by writing the secretary of the National Committee for the United States, Dr. H. Preston Hoskins, 221 N. LaSalle St., Chicago, Ill.

Treatment of Infectious Keratitis with Mercurochrome*

By G. W. BARDENS, *Lowell, Ind.*

Infectious keratitis is an acute disease affecting certain structures of the eye of cattle. A specific causative organism has not been identified, but organisms of the hemorrhagic septicemia group, staphylococci and streptococci are usually found. Even though infection is the cause of keratitis, other predisposing factors play a part in this disease, such as flies, strong sunlight and dust.

The symptoms in dairy and range cattle are the same, except that it is difficult to keep animals on range out of the dust and sun.

The usual symptoms are a rise in temperature, eyes closed, discharge of a water-like fluid which later becomes purulent and often is streaked with blood, causing a gluing of the eye-lids, which are red, swollen, and painful to the touch. As the disease progresses and treatment is delayed, the cornea becomes covered with a yellowish-white deposit and corneal ulceration takes place. The ulcers may break and the loss of the eye fluid destroys the eye.

I have not taken up in detail all the symptoms and sequelae because almost every veterinarian has had some experience with keratitis in the last few years, during the hot, dry periods, but I do wish to outline a treatment that to my knowledge has not been used by many veterinarians.

Excellent results can be expected from the use of keratitis mixed bacterins, starting with a 10-cc dose and repeating the bacterin treatment every 24 hours, increasing the dose 5 to 10 cc each day until a 20-cc dose is given. Usually two doses of bacterin will be found sufficient for dairy cattle when they can be kept in the stable. Range cattle are hard to treat, unless proper restraint is available.

*Received for publication, April 23, 1938.

Various preparations have been used in the eye but very few give the desired results in the treatment of keratitis.

Mercurochrome is the drug of my choice for local treatment. Very little literature is available on the use of mercurochrome in veterinary ophthalmology. Considerable literature is at hand on the use of mercurochrome in the human family. My references will be from the papers presented by physicians who have made extensive use of mercurochrome in the treatment of diseases of the human eye.

The initial compound used in the preparation of mercurochrome is a fluorescein. Fluorescein, which is a dyestuff, is carefully purified and then brominated. The dibrom-fluorescein obtained in this way is in turn purified and afterwards treated with mercuric acetate in such a manner that the insoluble or acid form of mercurochrome is formed. Merucrochrome as the disodium salt, which is soluble, is then prepared with all traces of inorganic mercury removed, standardized and sent to the veterinarian for use.

Mercurochrome is the disodium salt of dibromhydroxymercurifluorescein. It has a mercury content of 26.7 per cent and 21.3 per cent bromine, so there is no fee or ionic mercury present, such as is represented in bichloride of mercury and other toxic inorganic salts.

Gradle[1] wrote very favorably of the use of mercurochrome in various external infactions of the eye. Scott[2] has found that mercurochrome is valuable in the treatment of certain types of corneal ulcers. Hughes[3] uses the solution to determine the extent of the damage in corneal ulcerations. Iles[4] states that in the treatment of established conjunctivitis with mercurochrome we see a rapid subsidence of swelling and discharge, with no irritation from the drug.

Chambers[5] writes: "We have found mercurochrome superior to silver (silver compounds) in that irritation is considerably less (so it may be applied at more frequent intervals), it cannot damage the cornea, and there is no danger of staining the conjunctiva."

After reading these reports by physicians on the use of mercurochrome, I tried it on a large number of cases of keratitis in cattle, and my results over a period of four years have been very satisfactory. During 1937, I treated 380 feeder cattle in all lanolin, add 30 grams of petroleum jelly and mix well.

One dairy cow, with corneal ulcers on both eyes so severe that I thought treatment would not save her eyes, was given three doses of bacterins and a 4 per cent solution of mercurochrome was used in the eyes three times a day. In four months, she regained vision in both eyes and made a complete recovery.

Mercurochrome may be used in a 1 to 4 per cent aqueous solution and dropped in the eye. If you desire an ointment, add a solution of 5 grams of mercurochrome in 5 cc of water to 60 grams of lanolin. When the solution is thoroughly mixed with the lanolin, add 30 grams of petroleum jelly and mix well.

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[2]Scott, L. M.: Jour. Tenn. State Med. Assn. (January, 1927).
[3]Hughes: New Orleans Med. & Surg. Jour., lxxxiii (1930) 4, p. 246.
[4]Iles: Bristol Med. Chir. Jour., xliv (1927), pp. 125-128.
[5]Chambers: Brit. Med. Jour. (December 13, 1930), p. 992.

Bureau of Animal Industry Order Governing Bovine Abortion Vaccine

Under date of May 26, 1938, Dr. J. R. Mohler, Chief of the U. S. Bureau of Animal Industry, addressed Circular Letter 2106 to licensed establishments and others concerned in the production of bovine abortion vaccine:

> In order that in the marketing and use of bovine abortion vaccine there need be no intereference with the Cooperative Control of Bang's Disease, it is hereby ordered:
>
> 1. That this vaccine shall be recommended only for the treatment of calves from four to eight months of age, inclusive.
> 2. That trade labels, wrappers, cartons and the like used in connection with immediate or true containers of this vaccine (among other things) shall conform to provisions of accepted outlines of production.
> 3. That no recommendations in any form conflicting with these provisions shall be made.
> 4. That acceptance of outlines of production outstanding for this vaccine is hereby withdrawn, and those desiring to continue to produce it are required to submit new outlines for the Bureau's consideration.
>
> Effective July 1, 1938, provided that true containers bearing approved labels on receipt of this order may be marketed without relabeling, and provided supplemental labels approved by the Bureau may be used to correct present stocks of approved cartons.
>
> Issued under the provisions of Regulation 14 of B. A. I. Order 276 and Circular Letter No. 1681 of October 6, 1930.

Wisconsin Milk Price Drops

It has been estimated that milk production in Wisconsin during 1937 amounted to 11,378,000,000 pounds, of which 92 per cent, or 10,400,000,000 pounds, was marketed. The balance, about 8 per cent, was consumed on the farms where it was produced. During the first four months of 1938, production was increased about 3 per cent, according to estimates. However, the average price per hundredweight for these four months was only $1.45, compared with $1.61 during the same period of 1937.

Post-Parturient Hemoglobinuria of Cattle*

By J. FARQUHARSON *and* K. W. SMITH
Colorado State College, Fort Collins, Colo.

For a number of years, a disease has been prevalent in some sections of Colorado, Utah and Idaho, referred to as "red water" or hematuria of cattle. This condition has proven to be a hemoglobinuria instead of a hematuria. The extent of the disease is unknown. However, it constitutes an important problem on the eastern and western slopes of Colorado, northern Utah, and southern Idaho.

After reviewing the vast amount of work that has been done on hematuria, hemoglobinemia and hemoglobinuria, in the United States and in foreign countries, we find that very little has been written on this particular condition. This apparently is not the same disease reported by Records and Vawter, of Nevada; Kalkus, of Washington, and Bruce, of Canada.

In our experience, the malady is confined entirely to dairy breeds. It is a post-parturient disease of well-nourished mature animals, characterized by its sudden onset, and voiding of blood-colored urine. It appears almost entirely in the winter and spring, although cases have been seen in the summer. The first cases appear in November, after which they increase in number until March, followed by a rapid decrease as spring approaches.

Heavy milkers are the most susceptible and, like hypocalcemia, it generally occurs after the third calving. The majority of cases appear at about four weeks after calving, although it has been seen as early as two weeks and as late as six weeks.

The first symptom ordinarily observed by the owner is weakness due to the extreme exsanguination. However, bloody urine has been voided two or three days previously and has escaped notice. During this period, the appetite and milk-flow continue normally.

*Received for publication, April 23, 1938.

SYMPTOMS

The typical symptoms are those of weakness, incoördination of gait, staggering and anorexia. Upon casual observation the symptoms appear similar to those of milk fever. However, the animal does not lose consciousness. The milk-flow is not affected at first and never in proportion to the severity of the case. Most cows will continue to maintain almost a full flow of milk in spite of the fact that they are so weak they can hardly stand.

Examination at this time reveals extreme gauntness and paleness of the unpigmented skin, especially of the teats and udder, which are chalky white. The mucous membranes are pale and icteric. The heart is fast and palpitating to the extent that it is almost audible. The respiration is normal while the animal is left quiet; but is greatly increased after slight exercise. The skin of the extremities is cold and the animal chills readily. The temperature is slightly elevated, ranging from 103 to 104°F. or higher.

There are long periods between the acts of urination, causing large quantities of urine to be voided at a time. Catheterization is often necessary in order to demonstrate the bloody-colored urine. The vulvar tuft is usually blood-stained.

Toward the end, the retention of urine may change to an incontinence with continuous urination or almost a steady dribbling of urine accompanied by straining. At the same time, scant dark-colored feces are passed.

There is no rumination and a general atony of the digestive tract exists. Loss of flesh is very rapid. Finally, the patient becomes so weak that she is no longer able to rise and death follows in a few hours.

COURSE

The entire course, from the first signs of hemoglobinuria until death, is three to five

days. Some of the more acute cases will die within 24 to 48 hours after the symptoms of weakness and anorexia appear.

Recovery may occur at any stage of the disease except after the animal becomes recumbent, when death is almost sure to result. Many cows show the hemoglobinuria for only a short time without the development of other symptoms. Cows that recover from one attack are more susceptible to the disease in the future.

Severe cases that recover, particularly during cold weather, often develop a necrosis of the tail, tips of the ears, and even the feet. These parts may become gangrenous and slough away. This no doubt is caused by freezing during the time when circulation is impaired.

During the period of recovery, affected animals show symptoms of depraved appetite. They consume large amounts of salt, lick dirt, and even chew on bones or other foreign material.

Laboratory examination reveals that no ·ed blood-cells are present in the urine, the olood color being due to hemoglobin. The urine is alkaline in reaction and has a low specific gravity. Albumen and hemoglobin are abundant. Sugar is absent but traces of bile are found.

Blood drawn from the jugular vein is dark, thin and watery and shows erythrocyte counts as low as 2,000,000. Free hemoglobin is also present. No protozoa or other microörganisms have been found.

PATHOLOGY

Postmortem findings are quite constant. Icterus is always present to some degree, giving the tissues a yellowish color. The blood is thin and watery, of a brownish tinge and is slow to coagulate. Exsanguination is so extreme that there is little blood left in the vessels. The ventral portion of the body may show some edema and sanguineous fluid is found in the peritoneal cavity.

The liver is always yellow in color, somewhat enlarged and flabby. The heart muscle is flaccid and has a cooked appearance. All the muscles are pale. The bladder may contain reddish-colored urine and the kidneys show degenerative changes.

The histopathological examination of the parenchymatous organs bears out the gross changes noted. Liver sections show a marked degree of fatty change. The fat is present in greatest amount near the center of the lobules. In one case the central cells had undergone necrosis with karyorrhexis prominent. Fatty changes accompanied by lesser degenerative changes are observed in the convoluted tubules of the kidney. The outstanding lesions in the spleen are the extreme congestion and accumulation of blood pigment.

ETIOLOGY

The cause of the condition is unknown. Transmission experiments with blood of affected cows have failed to reproduce the disease in healthy cows. Estrum is absent at the normal time. This might indicate an endocrine disturbance since it always occurs after calving. However, this is merely a conjecture. The history of heavy feeding on concentrates is usually, although not always, present.

Heavy feeding on beet by-products such as pulp, molasses, and tops is often the history in these sections. Most of the cases that we have observed are in beet-raising sections, while the disease seems to be much less prevalent in outlying districts. It is incorrect to state that all cases may be traced to the feeding of beets or beet by-products, because we see many cases that have no such history.

Usually only one case is seen on the premises although it is not uncommon to have several cases in the same herd in one year. The junior author observed five cases in a group of ten cows within three months.

TREATMENT

In spite of the extreme exsanguination, the mortality rate is not over 10 per cent when proper treatment is administered. Purgatives and laxatives are positively dangerous and are to be avoided. A full dose of magnesium sulfate is very likely to result in death.

The affected cow should be placed in a warm, dry, well bedded stall and kept quiet.

In cold weather, blanketing and bandaging the legs is very beneficial in conserving the body heat and prevents freezing of the extremities. Remove all concentrates and give only alfalfa hay of good quality. Fresh drinking water should always be available. All cases should receive the following per os:

Ferric sulfate	1 dram
Copper sulfate	15 grains
Arsenous acid	3 grains
Nux vomica	1 dram

Rectal injections of warm physiological salt solution are beneficial. Glucose intravenously undoubtedly has its value. Ten to 15 minims of a 1:1,000 solution of adrenalin chloride given subcutaneously every four or five hours is indicated.

Blood transfusion is probably the most valuable part of the treatment, especially after signs of weakness develop. We prefer direct transfusion. This should be repeated as often as is necessary to maintain the strength. Several gallons of fresh warm milk given through a stomach-tube will aid in strengthening the animal.

Recoveries are slow, requiring ten to 14 days, due to the enormous drain on the vascular system. The milk flow usually returns almost to normal. The urine commonly becomes clear and normal in appearance in three or four days.

Prevention may be influenced by dietary measures around the time of parturition, consisting of removal of concentrates three weeks before and two weeks after parturition, during which time only alfalfa hay of good quality is fed. It is impossible to state that this is a definite means of prevention.

Thirteenth International Veterinary Congress

In the May issue of the JOURNAL was published the first installment of the list of veterinarians from the United States who had filed their applications for membership in the Thirteenth International Veterinary Congress, to be held in Zurich-Interlaken, Switzerland, August 20-27, 1938. Following is the second installment of the list:

Benbrook, E. A., Ames, Iowa.
Bergman, H. D., Ames, Iowa.
Bolin, F. M., Corvallis, Ore.
Boynton, Wm. H., Berkeley, Calif.
Butler, W. J., Helena, Mont.
Dale, Chester N., Washington, D. C.
DeLap, C. F., Springfield, Tenn.
Dolan, James T., Pearl River, N. Y.
Eichhorn, Adolph, Pearl River, N. Y.
Foust, H. L., Ames, Iowa.
Frey, Charles J., Silver Spring, Md.
Frick, E. J., Manhattan, Kan.
Gillies, Duncan R., Washington, D. C.
Graham, G. G., Kansas City, Mo.
Hardenbergh, J. G., Plainsboro, N. J.
Howlett, Nathan H., Albany, N. Y.
Huddleson, I. Forest, East Lansing, Mich.
Jacob, M., Knoxville, Tenn.
Lyon, B. M., Pearl River, N. Y.
Magrane, H. J., Mishawaka, Ind.
Marsteller, R. P., College Station, Texas.
Miller, Albert R., Falls Church, Va.
Mohler, John R., Washington, D. C.
Murphy, James M., Sussex, N. J.
Newsom, I. E., Fort Collins, Colo.
O'Flaherty, Fred, Cincinnati, Ohio.
Pauhlman, V. C., Olympia, Wash.
Person, O. H., Wahoo, Neb.
Pyle, Norman J., Pearl River, N. Y.
Rathore, G. S., London, England.
Roberts, Guy A., Ciudad Trujillo, Dominican Republic.
Sanders, Alfred F., Walkerton, Ind.
Schlaegel, M. P., Beloit, Kan.
Scott, Joseph P., Philadelphia, Pa.
Smith, William H., Jr., Washington, D. C.
Stubbs, E. L., Philadelphia, Pa.
Tax, Herman, Farmingdale, L. I., N. Y.
Totten, G. E., Washington, D. C.
Van Es, L., Lincoln, Neb.
Way, Cassius, New York, N. Y.

Phi Zeta at Ohio State Initiates

At a recent meeting of Delta Chapter of Phi Zeta, Honorary Society in Veterinary Medicine, the following students of the College of Veterinary Medicine, Ohio State University, were elected to active membership:

Graduate assistant: Dr. Robert Cyrog.

Seniors: J. R. Curtis, Harry Zweig, John R. Smith, Neal D. Lusk, Carl Lohmeyer, and W. G. Raudabaugh.

Juniors: Richard E. Baer, E. W. Spieth, R. C. Sweetser, M. R. Evans.

At the same meeting, Dr. J. W. Jackman, of Columbus, Ohio, and Dean R. P. Marsteller, of College Station, Texas, were elected to honorary membership.

R. E. R.

TETANUS IN RANGE LAMBS*

By ERNEST C. MCCULLOCH
State College of Washington
Pullman, Wash.

Tetanus usually is considered a disease of densely-populated or highly contaminated areas. For the most part, ranges have remained free from this infection, and in this region it is rare even in range horses which have received puncture wounds. The occurrence of tetanus in a considerable number of range lambs, therefore, is unusual.

A lamb showing typical clinical symptoms of tetanus was presented at the clinic with the history that from ten to twelve cases a day were developing in the two earliest lamb flocks. These had been castrated, docked and turned out on the home range, and the occurrence of losses at this time convinced the owner that some poisonous plant was responsible.

Physical examination showed a lamb that was stiff but could stand alone and even walk. Respirations were shallow and rapid, although the nictitans membrane was not noticeably drawn over the cornea. Touching or sudden noise resulted in a spasm, during which the lamb fell on its side and the legs were rigid.

Autopsy findings were essentially negative, except that the heart was flabby and the mucous membranes were somewhat cyanotic. Aerobic and anaerobic cultures from the spleen and heart-blood were negative. The docking wound had not properly healed and had a very offensive odor. Smears from immediately under the scab contained numerous organisms, mostly staphylococci, while long, slender Gram-positive rods were found in deeper scrapings.

When questioned about sanitary conditions, the owner said that he had recently moved on a new home ranch and that docking was done with a hot chisel. The occurrence of tetanus on a clean range was of sufficient importance to justify investigation even though the ranch was nearly 100 miles distant.

While the ranch was new to the present sheep man, it had been used continuously as a lambing headquarters for many years, the previous operator having failed because of excessive lamb losses. Lambing-shed sanitation was fair but the docking and castrating corrals and shelter on the range had been in use for many years. Floors were of dirt and, although situated near the top of a hill, the immediate drainage was poor.

A number of stiff lambs were available for examination as they remained alive from two to three days after becoming unable to walk. All had foul, improperly healed docking wounds. Examination of some 30 normal lambs which we were able to catch revealed docking wounds which were healing normally. No poisonous plants which could have been responsible for the condition were found on the range.

Instructions were given for all of the lambs to be corralled and the docking wounds examined. Those showing improper healing or a foul odor were curretted and dipped in tincture of iodine. All of the lambs docked the previous day also had iodine applied to the docking wounds. The docking corral and sheds were moved to a new location.

Following this treatment, the number of new cases which developed diminished rapidly. Succeeding lamb flocks which

*Received for publication, April 23, 1938.

were treated with tincture of iodine at the time of docking and castrating have remained free from the infection.

AN UNUSUAL CASE OF SALT POISONING*

By JOHN B. BRYANT, *Mount Vernon, Iowa*

Twenty-eight sows, due to farrow early in May, were transferred on April 1 to new quarters in clover pasture. About April 7, a sow sickened and on the 17th she died. About April 12, two more sows sickened. These were observed on the 21st. The daily ration consisted of 4 quarts of oats and two ears of corn per sow, and 6 gallons of protein and mineral balancer to the drove. Salt in the block was supplied and the water was from a well, given in an automatic waterer. All feed seemed to be of good quality and a careful check of the premises failed to reveal any incriminating evidence.

The two sick sows observed carried temperatures of 98.5° F. They appeared somewhat nervous and walked with a sort of nervous jerk in their gait. The appetites were very poor, they seemed to prefer grass and the droppings of the one milk cow in the pasture, to the grain ration. These two sows died, one on April 22 and the other on the 23rd, about three weeks after the transfer to new quarters. Both sows were posted on the day of death and the findings were almost identical.

There was severe necrosis of the glottis, with much mucus in the region. The lymph-glands of the head were normal, as were the lungs. There was a severe and extensive gastritis and a small amount of putrefactive material in the organ. Numerous hemorrhagic infarcts in the spleen were noted. The liver was inflamed, and there was some congestion in the cecum and colon. The urinary bladder was extensively inflamed and the walls greatly thickened. The contents consisted of purulent débris. The kidneys were in a state of purulent nephritis.

A diagnosis of caustic poisoning was made, salt being the suspected agent. This was confirmed by a federal consultant at the second autopsy. These sows were fed loose salt in the old quarters. When moved, they were given a block of salt. Probably the sows did not find this form so readily available as the loose salt. On April 5, there was a heavy rain, and it is believed that this dissolved enough salt and made brine which the affected sows found and consumed. The salt block was moved to cover and no further losses ensued.

*Received for publication, May 23, 1938.

BICORNUAL PREGNANCIES IN THE COW*

By W. R. KRILL, *Columbus, Ohio*
College of Veterinary Medicine, Ohio State University

The above title will no doubt be questioned by most veterinary obstetricians. Williams, in his text on "Veterinary Obstetrics," states definitely that bicornual pregnancy never occurs in ruminants. However, in the past year, I have had occasion to attend two cases of dystocia in cows which have convinced me that our teaching in this regard has been in error.

CASE 1

The first case was presented at our clinic in May, 1937. She was an undersized, grade Holstein, primipara, and had been in labor three days. Delivery had been attempted by the owner. He later called in two veterinarians, who pronounced the case hopeless, due to the physical condition of the dam. When presented at the hispital, the heifer was very weak and unable to stand. She had a subnormal temperature, and there was a very foul, fetid odor emanating from the vulva. It was definitely a hopeless case, and delivery was attempted only to satisfy the owner and give the students some obstetrical experience.

Manual examination revealed an emphysematous fetus, in a transverse, dorsal presentation, with the head and fore feet in the right uterine horn, and the posterior limbs and buttocks in the left uterine horn. The dorsum of the fetus, at the junction of the lumbar and thoracic vertebrae, was

*Received for publication June 9, 1938.

in direct contact with the cervix. Embryotomy was performed and the fetus delivered, but the patient succumbed during delivery. Postmortem examination revealed an abnormally enlarged body of the uterus, with both horns equally developed as to size and number of cotyledonary attachments.

CASE 2

The other case occurred in February, 1938. A Guernsey cow, with her third calf, had been in labor eight hours. She was in good physical condition. Manual examination again revealed a transverse dorsal presentation, the thoracic-lumbar vertebral junction being in direct contact with the cervix, the anterior portion in the right horn and the posterior portion in the left horn. Here again it was impossible to repel either extremity sufficiently to bring about a caudal or cephalic delivery. Embryotomy was performed and delivery accomplished. Examination of the uterus following delivery again revealed an abnormally enlarged body of the uterus, with apparently equal distribution of the fetal membranes and cotyledonary attachments in the two horns. Recovery was uneventful.

It should be pointed out that, while in the mare bicornual pregnancies always present ventrally, in these two cases in the cow the presentation was dorsal, which allowed the fetus to conform itself to the acute angles at which the horns leave the body of the uterus.

DYSTOCIA CASE RELIEVED BY CHLORAL*

By JOHN B. BRYANT, *Mount Vernon, Iowa*

A 300-pound sow had been in a parturient state for twelve hours. A portion of placenta was protruding from the vulva. The sow was straining very slightly and the owner said, "She has quit trying." The external genitals of the sow and the hands of the operator were cleansed and lubricated. Manual exploration revealed a roomy pelvis and a partial dilatation of the vagina, os uteri and body of the uterus. With the arm passed in nearly to the elbow, a pig's head was encountered. With forced dilatation and traction, this pig was delivered. In about ten minutes, a second pig came back to the constricted portion of the uterus. This pig could not be grasped, so tightly did the uterus encase the hand. Cesarean section was decided upon.

Six drams of chloral was dissolved in a pint and a half of warm water and given *per os*. The sow lay down rather promptly and the preparation of the site of operation and the instruments proceeded. It was noticed that the sow had resumed apparently normal labor and this was the case, for in 15 minutes after she received the chloral, she delivered the second pig. Before the instruments were repacked, she delivered two more live pigs, and in about an hour and a half after the chloral was given, this sow had delivered seven pigs, which gave her a litter of eight live pigs.

According to Winslow's "Materia Medica and Therapeutics," "the prominent action of chloral consists, in ordinary doses, in depressing the sensory and motor centers of the brain. Neither the sensory nerves, motor nerves nor muscles are affected except in the later stages of poisoning." On internal uses Winslow says that chloral is used "first and foremost to relieve spasm." He lists "rigidity of the uterine os in the first stage of labor" as one of the "spasmodic conditions benefited by chloral." Of course this one experience should establish nothing, but it supplies the incentive to try the same treatment again under similar conditions.

*Received for publication, May 23, 1938.

COCKLEBUR POISONING*

By G. P. FORREST, *Hopkinton, Iowa*

In the spring of the year, we are apt to encounter this form of poisoning when the plants are small. Symptoms are not always observed as death occurs very suddenly. Pigs may be seen to lie around for a few hours and then die. Usually the pigs are found dead. Temperature is normal. On postmortem, the young sprouts are found

*Received for publication, May 23, 1938.

in the stomach. No other findings may be observed.

A young practitioner was perplexed a week or so ago by the loss of ten pigs within 24 hours. The pigs died suddenly, without any apparent signs of sickness. Others were droopy and lived an hour or two. Temperatures in the sick pigs were normal. There was sickness in two pens of pigs which were shut up and not permitted to run out in the pasture. The only findings on autopsy were the sprouts in the stomach. The pigs were not permitted to have access to the pasture and no further deaths occurred.

SUGGESTIONS ON FEEDING PROTEINS TO SWINE*

By JOHN B. BRYANT, *Mount Vernon, Iowa*

The statement, often made, that swine need a variety of proteins, may need amplifying for the benefit of some owners.

This writer can maintain his appetite and weight on a rather narrow variety of foods, while his wife requires a much wider variety. Palatability is an essential element in all rations. Growing swine may find corn, oats and tankage, with a mineral, sufficient for satisfactory gains, while a wider variety of proteins might, because of added palatability, stimualte greater consumption of feeds, produce more rapid gains and result in fewer individuals that do not "do well." But for pregnant and nursing sows, it becomes vastly more important that palatable proteins be supplied and that each sow consume her requirements.

In a drove of 23 nursing sows, recently observed, three went off in their hind parts. The ration was the same for all and the litters were about the same in size. Twenty sows thrived and three were in trouble. It was held in this case that there was too narrow a variety of proteins in the ration, and that the proteins offered were lacking in palatability. The addition of ground alfalfa and oil meal to the ration terminated further trouble. It is much better policy to practice prevention of suckling-sow paralysis than to be forced to attempt curative treatment.

Protein starvation may be attributed to one or any combination of three causes: deficient ration, lack of palatability and faulty assimilation. A pregnant sow suffering from protein starvation will deliver poorly developed pigs and after the farrow, such a sow will draw upon her body muscles to augment the protein in her milk. The result, almost inevitable, is nursing-sow paralysis. The mineral intake is vastly important to a nursing sow. However, this writer contends that protein intake is of equal importance and that a variety of proteins, offered in sufficient amount, is more likely to be palatable and assimilated, and, therefore, a wise preventive measure against nursing-sow paralysis.

*Received for publication, May 23, 1938.

POISONING SUSPECTED*

By C. B. STRAIN, *Dunkerton, Iowa*

The following case was observed a short time ago. A farmer lost two mature sows and another sow was sick. Sickness came on very suddenly. The sick sow had a normal temperature, was weak, gaunted up and off feed. There were no swellings around the throat. Breathing was apparently normal, and there was no coughing or diarrhea.

Two autopsies were performed and both were the same. The blood was very dark and did not coagulate readily. The glands were normal. The spleen was enlarged but normal in consistency and color. There was extensive and acute gastritis. In the bladder was a gummy, dark residue that resembled feces. In the kidneys there were balls of the same material.

The diet, premises and water supply were checked. No evidence of poisoning was discovered and yet some kind of poisoning was suspected. The owner was advised to move the remaining sows and their litters to clean ground and not permit access to the old yards and buildings. Anthrax was also suspected, but it was

*Received for publication, May 23, 1938.

ruled out on account of normal temperatures, normal breathing and normal glands.

The answer to the above question is not known but no more deaths occurred.

POSTERIOR PARALYSIS IN A COW CAUSED BY A TUMOR*

By L. P. DOYLE, *LaFayette, Ind.*
Department of Veterinary Science
Purdue University Agricultural Experiment Station

A ten-year-old grade Shorthorn cow was found down and unable to rise, due to disability of the hind parts. It was said that the cow had not been noticed as being weak behind before she went down. She had calved normally about two months previously; and the calf had remained apparently normal.

When the animal was seen by the writer, she had been down about two weeks. She had continued to eat and drink and appeared bright and alert. She still had almost normal control of the front legs but was entirely helpless behind. There was apparently almost complete loss of skin sensation posterior to the thorax.

By request of the owner, the animal was killed and subjected to a postmortem examination. There were several tumorous masses on the abdominal organs. In addition, two large ones were found in the diaphragm and one in the roof of the pelvis. The tumors in the abdomen were subperitoneal in position. There were at least five of these neoplasms on the stomach; and smaller ones occurred on the intestine. The largest one, about six inches in diam-

*Received for publication, April 29, 1938.

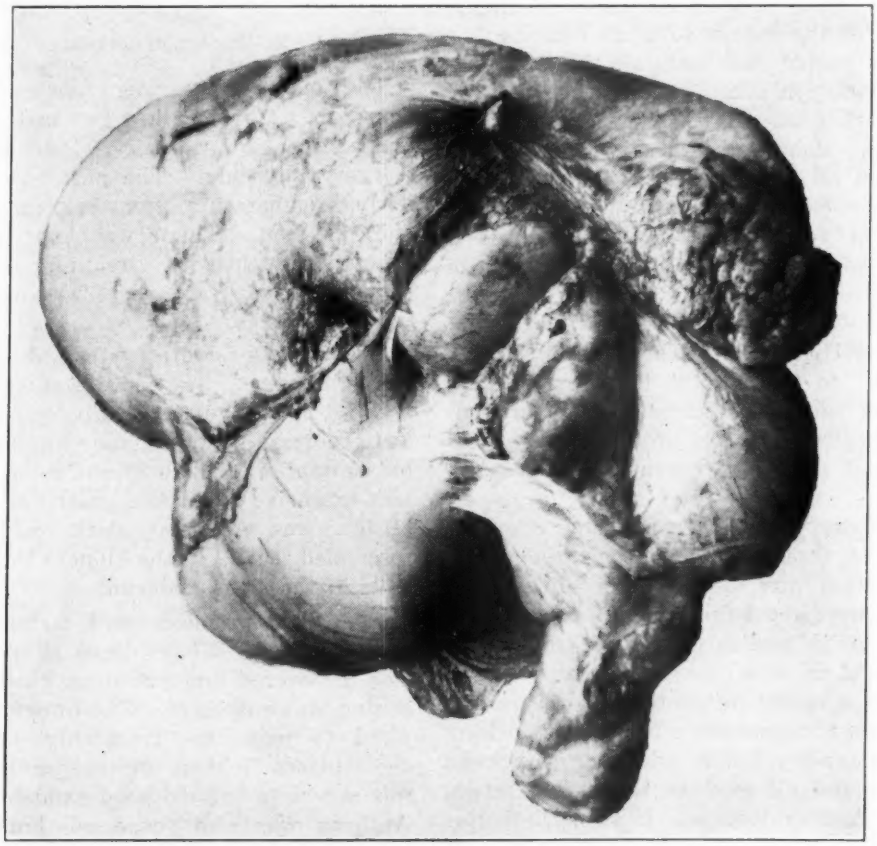

FIG. 1. Photograph showing tumors on the stomach.

eter, was located on the anterior end of the rumen, immediately above the reticulum. Another large one was located between the parietal peritoneum and the first, second and third lumbar vertebrae. This tumor had not appreciably damaged the vertebrae with which it was in contact.

The flattened tumor located in the roof of the pelvic cavity was perhaps of primary

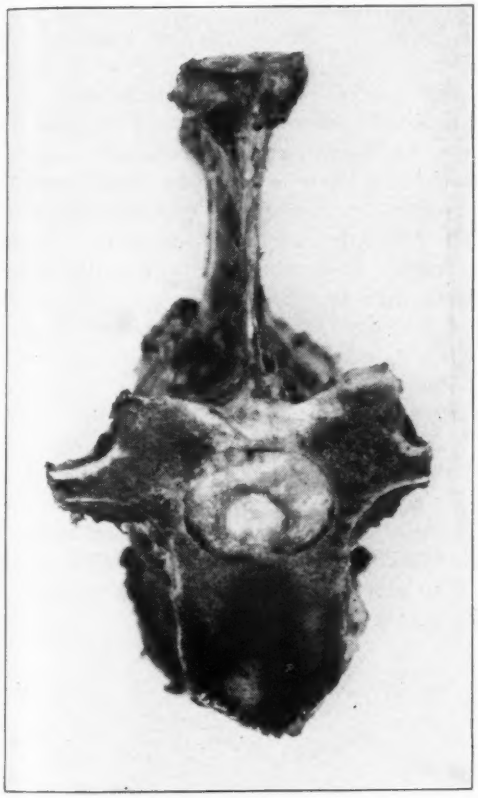

FIG. 2. Photograph showing the new growth filling the vertebral canal around the spinal cord and compressing the cord.

importance in relation to the symptoms the animal had shown. When the vertebral canal was opened, the space around the spinal cord was found to be filled with new growth which extended as for forward as the last thoracic vertebra. The new growth in the spinal cord had apparently originated from the tumor in the pelvic cavity. Practically all of the abdominal and pelvic lymph-glands were enlarged. The superficial body lymph-glands were apparently not grossly affected. The bones were apparently normal. The new growth was of rather soft consistency and grossly appeared to be sarcomatous in nature.

Microscopic examination showed the neoplastic formation to be a lymphocytoma. This was true of the abdominal tumors as well as the growth in the vertebral canal. The spinal cord was not found to be invaded by the tumor. The cord showed degenerative changes in both the gray and white matter, which was probably due to pressure from the neoplasm.

DEADLY NIGHTSHADE OR BELLADONNA POISONING*

By R. S. BETTS, *Lost Nation, Iowa*

This form of poisoning is not uncommon in this part of the country. The plant grows abundantly around fields, barn lots and along lanes and fences. It can be recognized easily by the white blossom which later turns to a green berry. This green berry resembles a green gooseberry. It later ripens and becomes dark in color like a ripe gooseberry. The leaves and roots contain the mydriatic alkaloids, but the berries do not. The chief alkaloid is atropine.

The chief symptoms are dilation of the pupils, blindness, incoördination, convulsions, coma and death. The temperature usually is but slightly elevated. A very simple method of diagnosis is to place a few drops of urine from a sick animal in the eye of a well animal and watch for dilation of the pupil, which will occur in a few minutes.

Treatment is not effective, as death occurs in a short time. A lesion that is commonly found is a large coagulum of blood around the kidneys, caused by the dilation and rupture of blood-vessels in that region. Change of pasture or lots is recommended, following which losses usually terminate.

*Received for publication, May 23, 1938.

PINE POLLEN IN ANIMAL FECES*

By E. A. BENBROOK, *Ames, Iowa*
Department of Veterinary Pathology, Iowa State College

Animal feces always contains indigestible matter, some of which in size, shape or color may resemble the eggs of parasitic worms or the oöcysts of coccidia.

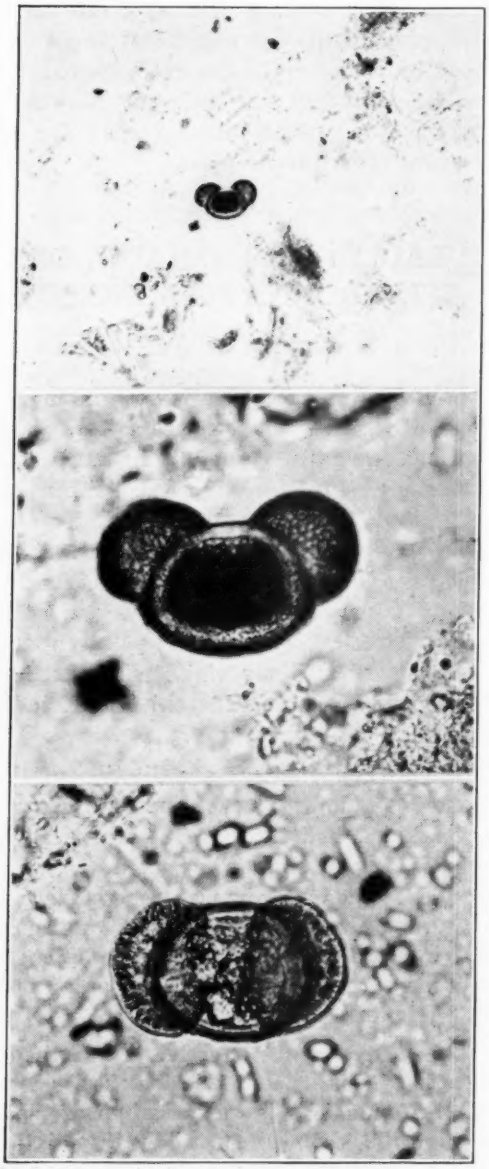

FIG. 1 (above). Pine pollen grain in feces from a dog (x 100).
FIG. 2 (middle). Same as fig. 1, but higher magnification (x 410). Note the central cell with the two lateral balloon-like wings.
FIG. 3 (below). Same as fig. 2, but showing the balloon-like wings uppermost (x 410).

*Received for publication, June 6, 1938.

In the late spring and early summer, pollen is liberated profusely from the various species of pine, spruce, fir, larch, juniper and redwood trees. Botanists have estimated that a single pine tree may liberate as much as a quart of pollen grains.[1] The pollen is in the form of a yellow dust, resembling ordinary powdered sulfur; and the individual microscopic grains may be borne by the wind for hundreds of miles.

The specific gravity of pine pollen grains is as low or lower than that of most of the parasitic worm eggs and coccidial oöcysts; hence they may appear in fecal samples examined by one of the concentration-flotation methods commonly in use.[2] Dogs, cats and other animals frequently ingest pollen with food and water.

As shown in figures 1, 2 and 3, pine pollen grains under the microscope, using ordinary low and high dry lens magnification, appear as brownish, trilobed bodies about the size of common hookworm eggs of the dog (85x48μ). The central portion is an ovoid cell containing the nucleus and the two lateral masses are balloon-like wings filled with air. Similar pollen grains are produced by the evergreens related to the pines.

REFERENCES

[1]Holman, R. W., and Robbins, W. W.: Textbook of General Botany. (John Wiley and Sons, Inc., New York, 1924.)
[2]Hall, M. C.: Diagnosis and Treatment of Internal Parasites. (Veterinary Medicine Publishing Co., Chicago, 1923.)

AN UNUSUAL CASE OF PREGNANCY IN A COW*

By W. F. GUARD, *Columbus, Ohio*
College of Veterinary Medicine, Ohio State University

Subject: Roan Shorthorn, female, four years old.

History: Was pasture-bred in the summer of 1936. In January, 1937, the cow filled out (began bloating) as though going to calve, and went off feed for a few days. The owner gave Epsom salt and the bloated

*Received for publication June 9, 1938.

appearance disappeared. In March or April, 1937, she was in estrum and was bred. In July or August, 1937, a swelling was noted on the ventral surface of the abdomen. Serum began to exude from the swelling and later some bones perforated the skin. This condition existed until October 22, 1937, when Dr. Herman W. Miller, of Westerville, Ohio, obtained possession of the animal and contacted Dr. W. F. Krill relative to our interest in such a case. We encouraged him to bring the cow to the Veterinary Clinic.

Figure 1 shows the case at that time, with the bones of both fore limbs of a fetus protruding through the abdominal opening. Within a few days, another enlargement appeared on the left of the median line, opened, and the bones of the head were palpable.

On October 26, the vulva being too small to permit manual examination, a small glass speculum was inserted but the cervix could not be seen, as it was drawn downward and forward.

Rectal palpation was not very enlightening. Only the right horn of the uterus could be palpated and the right middle uterine artery was slightly enlarged.

OPERATION

On October 30, the animal was cast and anesthetized with chloroform. A six-inch transverse incision was made across the median line connecting the two openings in the abdominal wall. The partially decomposed and desiccated fetus (fig. 2) was removed. Dr. Krill made a rectal palpation while the writer explored the interior of the cavity and definitely determined that the right uterine horn, adherent to the ventral wall of the abdomen, constituted the fetal bed. The uterine wall of the involved horn was greatly thickened. During all the time that the cow was under observation, her temperature and appetite were normal.

POSTMORTEM FINDINGS

The animal made an uneventful recovery and was placed in the feed-lot in January, 1938. She was slaughtered on April 11, at

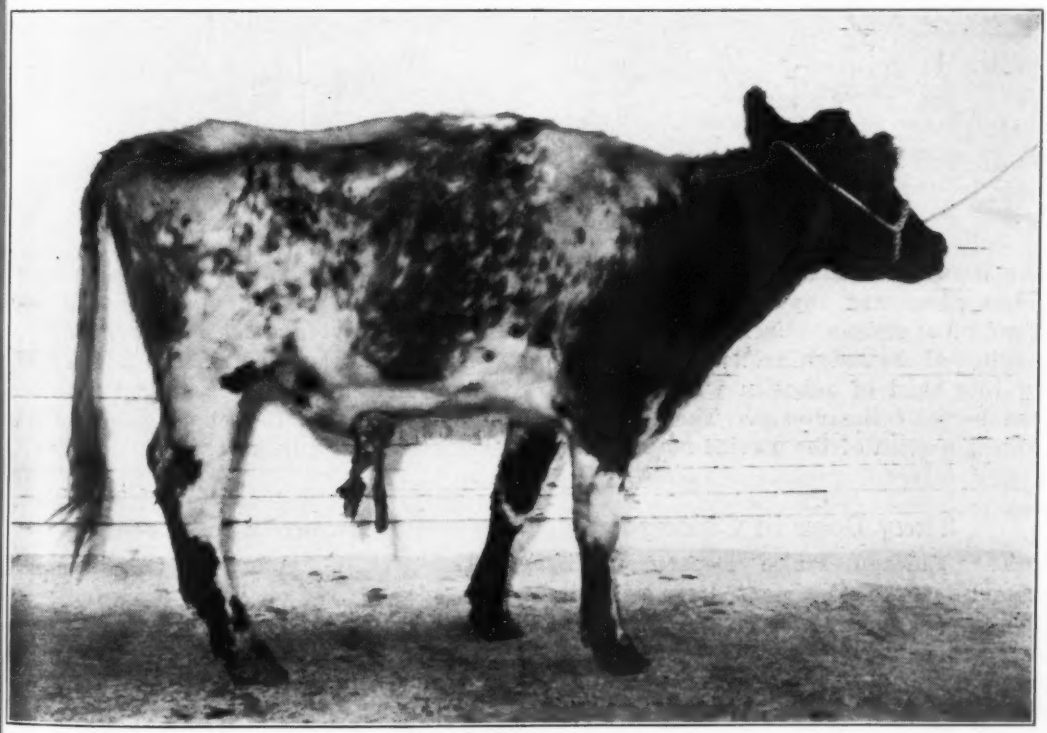

FIG. 1. Photograph of cow when first seen.

the packing-plant. The animal was in excellent condition. We were unable to make incisions and observations to our liking but present the following report:

The right horn was about 1½ inches in diameter and contained a slate-colored, muco-purulent material. The free end of the horn was about 12 inches in length. Then there was approximately a 10-inch band of adhesion, ¼ inch in width, to the midline of the abdominal floor. Five inches of this band of adhesion was anterior to the horn of the uterus. The 5-inch adherent portion of the uterine horn involved the longitudinal convex curvature of the horn. The free base of the right horn was dorsal to and somewhat adherent to the dorso-medial wall of the left horn.

Considering everything, it seems to the writer that there was undoubtedly a half-turn clockwise of the right uterine horn. The fetal carcass and history would seem to indicate that the calf was present and the twist occurred about January, 1937.

The right ovary contained a 2-inch cyst. The peritoneal cavity was normal, with the exception of this 10-inch longitudinal adhesion of only ¼ inch in width.

FIG. 2. Partially decomposed and desiccated fetus.

Stray Dogs in Chicago

The Chicago Police Department impounded 6,378 stray dogs during the first five months of 1938, as compared with 13,567 for the same period during 1937. The Chicago Board of Health hopes this year to duplicate the record of 1937—no human deaths from rabies.

National Dog Week

The week of September 18-24 has been designated as National Dog Week for 1938. It will mark the eleventh observance of a movement started in 1928, by a group of well-known dog-lovers, who maintain headquarters at 3323 Michigan Boulevard, Chicago.

DOLLAR'S VETERINARY SURGERY, GENERAL, OPERATIVE AND REGIONAL. J. J. O'Connor, M.R.C.V.S., Professor of Surgery at the Veterinary College of Ireland. 3rd edition, rewritten and extended. viii+ 990 pages, with 420 figures. Alexander Eger, Chicago, 1938. Cloth, $10.00.

Professor O'Connor has again rewritten Dollar's well-known treatise on Veterinary Surgery, the second edition of which was reviewed in the April, 1931, issue of the JOURNAL. In rewriting this work, Prof. O'Connor's aim was to abridge it, without omitting any essential detail, to supply deficiencies, and to arrange the matter in a more concise manner and under headings which would greatly facilitate the reader in grasping the salient points of the subject. As pointed out in the preface, abridgment was made possible by:

1. Omitting anatomical descriptions, which may be obtained from works on anatomy.

2. Avoiding the unnecessary repetition of details, such as those of inflammatory symptoms or of the preparation of the site of operation.

3. Arranging matter in an abbreviated fashion under separate numbered headings, thereby obviating the use of several sentences.

4. Omitting references of dubious value or which seemed to obscure rather than throw light on the subject.

Deficiencies have been supplied by the introduction of much new material, which will be revealed at once on perusing the book and comparing its contents with those of the original work.

Among the new features introduced into the second edition were (1) the addition of the whole of Part I, (2) several articles in Parts II and III, and (3) the placing of all the principal operations in one section, rendering them convenient for revision and easy reference for the student when practicing on the dead subject.

Notable among the material added to the third edition will be found (1) a section on "Affections of the Skin," (2) descriptions of anesthesia by nembutal, evipan and pentothal, and of epidural anesthesia in the various animals, and (3) the treatment of fractures by unpadded plaster casts and other details, while all existing material has been carefully brought up to date. Many new illustrations have been introduced and a number of old figures which were considered obsolete or unnecessary have been omitted. Expressions of appreciation of the enhanced value of the second edition have been received from a number of readers both at home and abroad. It may therefore be justly claimed that in this latest edition the recognized value of the original work has been still further increased.

Prof. O'Connor's sources of information include, in addition to the original work, his own experiences, conversations with practitioners, veterinary periodicals, and published works by Cadiot and Almy, Williams (New York), Williams (Edinburgh), Macqueen, Hobday and Wooldridge. He has given the names of authorities throughout the book wherever it was possible to recall them. It is obvious that the aspirant to proficiency in clinical and operative veterinary surgery should have a thorough knowledge of anatomy, physiology, pathology and bacteriology, as each of these subjects has an important bearing on surgery. Without a sound knowledge of anatomy it is impossible for the surgeon to operate with confidence or understand many of the abnormalities met with in veterinary practice. Surgical lesions interfere with physiological processes and are dependent on pathological

conditions, many of which are due to micro-örganisms.

The student or veterinarian beginning his career should develop his powers of observation and make himself very familiar with the normal habits and characteristics of the domesticated animals and with the anatomy and functions of their various organs. Otherwise he will not be in a position, as a clinician, to give competent opinions as to abnormal conditions affecting them.

It is the opinion of the reviewer that the general appearance of the third edition has been much improved by the elimination of the illustrations criticized in the second edition. Moreover, the American veterinarian would have appreciated illustrations of up-to-date apparatus for diagnosis, surgery and treatment in this country. However, it must be remembered that this work is restricted in scope to the methods used in Great Britain and makes no claims to presenting modern methods used elsewhere.

That Dollar's Veterinary Surgery is an outstanding treatise in the field covered, is attested by the fact that it is used as a text or reference by every veterinary college in the United States. The amount of labor required to revise a work of this kind is tremendous and we congratulate Prof. O'Connor for the fine job he has done and express our appreciation to the publisher for his part in making this third edition available to the veterinary profession.

VETERINARY PATHOLOGY AND BACTERIOLOGY. S. H. Gaiger, F.R.C.V.S., and G. O. Davies, M.V.Sc., M.R.C.V.S., D.V.H., University of Liverpool. 2nd edition by G. O. Davies. x+712 pages, with 195 illustrations. Alexander Eger, Chicago, 1938. Cloth, $6.50.

Since the appearance of the first edition of this book, the reviewer has to record the much regretted death of Prof. S. H. Gaiger, who collaborated with Prof. Davies in preparing the first edition.

As pointed out in the preface, the vast amount of published work which has appeared within recent years, and further experience in teaching have demanded such extensive changes in the book that every chapter in the second edition has been entirely or partly rewritten. The general plan of the book remains unaltered, but many new subjects and diseases which have attained importance have been included.

Certain changes also have been made in the nomenclature of the bacterial species, particularly those of the colon-typhoid group. In the first edition, the colon-typhoid group was described as consisting of four genera: *Escherichia, Salmonella, Shigella* and *Eberthella.* In 1934, the Saimonella Subcommittee of the Nomenclature Committee of the International Society of Microbiology made their recommendation relating to the *Salmonella* genus. As their definition of the genus is considerably broader than that hitherto adopted in this book, many organisms previously in other genera now come within the definition of the suggested genus *Salmonella* Lignières, 1900.

Until the new definitions are universally adopted and in order to avoid confusion by perpetuating the use of the term *Salmonella* in the limited sense of the first edition, it has been considered advisable to follow the practice of Topley and Wilson in "The Principles of Bacteriology and Immunity," and include all the members of the colon-typhoid group under the generic name *Bacterium.*

The new matter which Prof. Davies has felt constrained to incorporate in this edition has to some extent militated against any lengthy amplification of certain chapters that some of his colleagues considered advisable. To have done so would have defeated one of the objects of the book, namely, keeping it within reasonable proportions. A number of new illustrations and tables have been added and others have been withdrawn or replaced.

The busy practitioner will, no doubt, be very much pleased to acquire a well-written but concise text which contains the subjects of veterinary pathology and bacteriology in one volume. The summaries and classifications will be found to be of particular value. This second edition is very well arranged and the illustrations are most ex-

cellent. However, there appear to be a few subjects upon which the author has evidently not exercised sufficient diligence in bringing his material up to date. For example, under the title "Newcastle disease," he gives the synonym, "Ranikhet disease." As a matter of fact, this is the same disease that appeared in Korea, which the Japanese reported as an unnamed disease of fowl. In the Philippine Islands, it was reported under the name of avian pest and it has been reported also as pseudo-fowl pest.

Another instance that may be noted in which the information is not up to date is with reference to rinderpest. Under the subject of immunity, no mention is made of the work of Kakisaki and his associates, in Japan; Boynton, Kelser and Rodier, in the Philippine Islands; Daubney, in East Africa; Jacitot, in French Indo-China, or the work done in India and elsewhere. All of these countries, for several years, have been using tissue vaccines prepared in a variety of ways. As a matter of fact, in the hands of the Japanese, the French in French Indo-China, and the Philippine Bureau of Animal Industry, rinderpest has been practically eradicated in those countries for more than four years. The reviewer believes that such important matters should be mentioned in a text on veterinary bacteriology published in 1938.

There is a definite need, both in the colleges and on the busy practitioner's desk, for a work of this nature and, aside from the comments made, the reviewer believes that the vast amount of work involved in bringing this book up to date has been well worth while. Both the author and the publishers are to be commended for making it available to the veterinary profession.

Doctor Merillat Honored Again

One hundred and fifty veterinarians and their ladies, from 30 Iowa counties and the states of Nebraska, Illinois, Minnesota and Missouri, turned out in honor of Dr. and Mrs. L. A. Merillat, of Chicago, on May 12, 1938, at the Hotel Roosevelt, Cedar Rapids, Ia. The occasion was a special dinner party given to celebrate the 50th anniversary of Doctor Merillat's graduation from Ontario Veterinary College. The affair was sponsored by the East Central and the Eastern Iowa Veterinary associations.

Dr. John B. Gingery, of Muscatine, Iowa, as toastmaster, presented Dr. D. M. Campbell, editor of *Veterinary Medicine*, Chicago, who reviewed the colorful career of Doctor Merillat as a veterinarian and pointed out the value of his 50 years of service as a private practitioner, educator, author, translator, editor and military veterinarian. He said that Doctor Merillat's instruction of a large group of students at the Chicago and McKillip Veterinary colleges had resulted in sending forth into the world a very capable crew of disciples to carry on the great work of the veterinary profession and that his teachings will live on long after we are forgotten.

Dr. J. I. Gibson, of Cedar Rapids, former State Veterinarian of Iowa, made the presentation of the golden anniversary gifts to the honored guest. Dr. C. N. McBryde, of Ames, extolled Doctor Merillat's exceptional career as a veterinarian. Dr. A. T. Kinsley, of Kansas City, spoke feelingly of his intimate association with and the great work done by Doctor Merillat.

Other speakers on the program were: Drs. L. Proctor, John J. Strandberg, H. A. Seidell, J. A. Barger, R. M. Hofferd, N. L. Nelson, R. D. Wall, L. F. Barrett, J. H. Odgers, Jas. C. Carey, C. E. Juhl, John B. Bryant, Fred J. Crow, John F. McCabe, J. H. Spence, G. A. Kay, Frank L. Roach, Jerry Wolfe, J. C. Glenn, J. M. Vernon, Wm. C. Vollstedt, C. C. Franks, Wm. S. O'Brien, C. C. Graham, Iva Dunn, J. W. Lucas, Major Claude Cox, Mrs. Merillat and Mrs. A. T. Kinsley.

Many messages of felicitation were received from prominent veterinarians from coast to coast.

THE RELATION OF IODINE TOLERANCE TO THYROID FUNCTION. E. M. Watson. Endocrinol., xxii (1938), p. 528.

Anatomical and functional disturbances of the thyroid gland may be considered from the standpoint of probable alterations of the iodine metabolism. The nature of such disturbances may be studied by observing the rate and completeness of disappearance from the blood-stream of iodine following its intravenous injection. The thyroid apparently is the only organ which abstracts and stores iodine from the blood. This property is accelerated in conditions of thyroid hyperplasia associated with thyrotoxicosis. Injected iodine disappears less rapidly from the circulation in hypothyroidism. The anterior pituitary, through its influence upon the thyroid, may affect the basal metabolism and the iodine tolerance test in an inverse manner. The author concludes that the iodine tolerance test may permit a more comprehensive classification of endocrine disorders.

EXPERIMENTAL INDUCTION OF ESTRUS IN THE DOG. J. H. Leathem. Endocrinol., xxii (1938), p. 559.

All external manifestations of estrus, namely, vulva swelling, bleeding and mating as well as endometrial hypertrophy, may be induced in the normal dog with either an extract of menopause urine or progynon-B. Induction of estrus with menopause urine extract was successful with mature dogs in anestrus or metestrus, as well as with immature dogs in 14 of the 16 cases tested. This extract produced pure follicle stimulation comparable to the F. S. H. of the anterior pituitary, whereas progynon-B exerted no obvious effect on the ovary. A cycle accelerated to proestrus with menopause urine extract will continue through estrus quite normally and is followed by a pseudopregnant period thus duplicating the spontaneous cycle. A pseudopregnant period did not follow estrus induced with progynon-B. Ovulation was not observed with menopause urine extract alone but injection of follutein on the first day of estrus resulted in pregnancy in one of three cases.

THE CHEMICAL COMPOSITION OF THE ACTIVE AGENT OF THE ROUS SARCOMA NO 1. A. Pollard. Brit. Jour. Exp. Path., xix (1938), p. 125.

The tumor-producing agent of the Rous sarcoma No. 1 can be deposited from cell-free extracts by means of the Sharples centrifuge. The resuspended deposit can be further purified by the method of fractional centrifugation. The product obtained consists mainly of protein with a variable amount of lipoid material. Preparations from lipoid extracted tumor desiccates contain much smaller amounts of lipoid but still retain their tumor-producing activity.

THE PREPARATION OF PROTECTIVE SERA AGAINST HEMOLYTIC STREPTOCOCCI. H. Loewenthal. Brit. Jour. Exp. Path., xix (1938), p. 143.

The antigen responsible for the production of the antibody effective against the invasiveness of hemolytic streptococci is intimately associated with the capsule which these cocci develop in the early hours of growth in culture. This antigen is extremely labile, and is readily destroyed by heat and low concentrations of formalin or merthiolate. Exposure of young encapsulated cocci in suspension to a temperature of 55° C. for 12 minutes kills the organism

but leaves the capsular antigen intact. More prolonged heating at this temperature rapidly destroys this antigen. It is possible, by cautiously heat-killing young cultures, to prepare potent protective sera against hemolytic streptococci in the mucoid phase. This method of immunization also gives rise to protective antibody against non-mucoid strains more rapidly and regularly than the old methods.

COMPARISON OF *Bacterium Necrophorum* FROM ULCERATIVE COLITIS IN MAN WITH STRAINS ISOLATED FROM ANIMALS. G. M. Dack, L. R. Dragstedt, Robert Johnson and N. B. McCullough. Jour. Inf. Dis., lxii (1938), p. 169.

Forty-two strains of nonsporulating Gram-negative anaerobes called *Bacterium necrophorum,* were studied. Nineteen of these strains were isolated from the colon of human patients with chronic ulcerative colitis. According to the literature some strains should be called *Bacterium funduliforme* and others *Bacterium necrophorum.* According to the study made of the growth requirements, colony morphology, cell morphology on different media, biochemical reactions, pathogenicity for rabbits and ability to ulcerate the colon of experiment animals. No sharp line of differentiation of these strains was found. Only the twelve strains isolated from bovine liver abscesses were lethal for rabbits when injected subcutaneously. There were marked variations in the other strains in their ability to produce lesions. The type of lesion appeared to be similar with all strains. *Bact. funduliforme* and *Bact. necrophorum* are both associated with necrosis of the mucous membranes and give rise to metastatic abscesses in man and animals.

THE HEMOLYTIC STREPTOCOCCI OF MILK. J. M. Sherman and C. F. Niven. Jour. Inf. Dis., lxii (1938), p. 190.

A total of 313 samples of commercial milk, 68 raw and 245 pasteurized, were examined for hemolytic streptococci. Only 8.5 per cent of the pasteurized samples contained hemolytic streptococci, whereas broad zone hemolytic types were obtained from 18 per cent of the raw samples. Narrow-zone hemolytic types in blood-agar, the most typical form of *Streptococcus mastitidis,* were not considered. The cultures isolated were studied serologically and physiologically and classified into six groups. The prevailing types of hemolytic streptococci in raw milk were *Streptococcus mastitidis* and the "animal pyogenes"; the most common forms in pasteurized milk were *Streptococcus durans* and *Streptococcus zymogenes.*

HYDROGEN ION CONCENTRATION IN EXUDATES OF PNEUMOCOCCUS INFECTION. William H. Kelly, E. W. Scadron and B. M. Shinners. Jour. Exp. Med., lxvii (1938), p. 659.

With sanguineous exudate from the consolidated lungs of dogs with experimental pneumococcus pneumonia, there was usually direct or indirect evidence of increased hydrogen-ion concentration. The physicochemical changes in exudate from animals treated with artificial pneumothorax showed no important differences from those in other specimens. Sugar concentrations were markedly reduced in exudates from animals which died of the infection. Serous exudates from dermal pneumococcus infection in rabbits uniformly showed definite acidity by both direct and indirect methods of estimation. The hydrogen-ion concentration in exudates from dermal pneumococcus infection in rabbits varied between pH 6.87 and 6.66, but were not always proportional to the difference in sugar concentrations between the exudate and the blood.

THE EFFECTS OF ACIDITY UPON THE GROWTH OF PNEUMOCOCCUS IN CULTURE MEDIA CONTAINING PROTEINS. William H. Kelly. Jour. Exp. Med., lxvii (1938), p. 667.

In the presence of animal fluids or their protein constituents, Type I pneumococcus

survived and multiplied at acid hydrogen-ion concentrations which, in plain broth, were bactericidal for these organisms. Minimal numbers of these cells readily produced pneumococcus growth in serum broth when adjusted at hydrogen-ion concentrations as great as 5.5 with hydrochloric or to a pH of 6.5 with acetic acid. With large amounts of inoculum the organisms multiplied in serum broth adjusted to pH 5.0 with hydrochloric and pH 5.5 with acetic acid. Similar results were obtained with broth to which certain animal proteins were added and in serum broth which was previously heated by autoclave at 20 pounds pressure for 20 minutes. Pneumococcus growth was more rapid in serum-dextrose broth at pH 6.5 than in dextrose broth alone at the optimal pH of 7.8.

THE EFFECT OF A TISSUE ENZYME UPON PNEUMOCOCCI. Rene J. Dubos and C. M. MacLeod. Jour. Exp. Med., lxvii (1938), p. 791.

Polymorphonuclear leukocytes contain an enzyme which destroys the basophilic character of heat-killed pneumococci (R and S variants) and inactivates the type specific polysaccharide antign of encapsulated cells. The same enzyme, however, fails to cause a disintegration of the bacterial cells or to decompose the capsular polysaccharide itself. The enzyme has been extracted from a number of animal tissues; it appears identical with a purified enzyme extracted from pancreatin and which decomposes yeast nucleic acid.

IMMUNIZATION OF EXPERIMENTAL ANIMALS WITH A SOLUBLE ANTIGEN EXTRACTED FROM PNEUMOCOCCI. Rene J. Dubos. Jour. Exp. Med., lxvii (1938), p. 799.

Pneumococci killed by acetic acid at pH 4.2, then allowed to become Gram-negative at pH 7.0 under conditions such that no cellular disintegration took place, released in solution small amounts of a substance which is precipitable by acetic acid and soluble at neutral reaction. This soluble fraction injected into rabbits by the intravenous route caused the production of antibodies which afforded definite protection to mice infected with virulent pneumococci of types I, II and III. Other types were not tried. White mice, immunized with this soluble antigen, exhibited some active immunity to virulent pneumococci but the results were very irregular. Soluble fractions with apparently the same immunizing action were obtained from both virulent and avirulent cells of pneumococci.

THE INHERITANCE OF DEWCLAWS IN DOGS. Clyde E. Keeler and Harry C. Trimble. Jour. Heredity, xxix (1938), p. 145.

Dewclaws in the dog is a character having variable dominance, some individuals bearing one dewclaw gene being completely normal, others having one dewclaw and still others having two well developed dewclaws. The character appeared in 47.6 per cent of the heterozygotes and in 58.3 per cent of the F_2 from an outcross to non-dewclaw stock.

TRANSMISSION OF CHLOROLEUKEMIA OF MICE. John W. Hall and Frederick J. Knocke. Amer. Jour. Path., xiv (1938), p. 217.

Chloroleukemia was transmitted to related mice by the intravenous injection of leukemic cells. Subcutaneous inoculation of leukemic leukocytes produced a localized tumor at the site of injection in approximately 23 per cent of the inoculated mice. Intravenous injection produced a rapidly progressing generalized leukemia fatal after 20 days in 95.1 per cent of the injected mice. Suspensions of tumor cells injected intravenously were much less effective in transmitting the disease than spleen and lymph-node. Tumor tissue and spleen tissue injected subcutaneously were equally effective in producing subcutaneous tumor nodules. Irradiation of mice preceding injection gave a greater percentage of successful subcutaneous inoculations.

B. A. I. Plans Animal Disease Charts

A series of charts to bring about better public understanding of animal-disease problems and veterinary functions is in course of preparation by the Bureau of Animal Industry, U. S. Department of Agriculture. This development is in response to numerous requests for pictorial material for use by the veterinary profession, in educational fields, and particularly for exhibit purposes. The general purpose of the charts is to make the United States, which already is considered the world's safest country in which to raise live stock, still more secure in this respect.

Unique in Style

The development of the series is still in the formative stage but it is our plan to make the charts unique in style. They will be essentially a combination of an exhibit panel, a pictorial chart, and a condensed bulletin. The central feature of each chart will be an illustration descriptive of a particular disease or the loss it causes. Brief text will state the geographical distribution, seasonal occurrence, source of infection, principal symptoms, and means of prevention. The value of obtaining the services of a qualified veterinarian will receive appropriate emphasis. Thus the charts not only will acquaint stock-owners with animal-disease problems but also will advise the best procedures under veterinary guidance.

Aid in Terminology

A further purpose of the series of charts is to encourage more uniform terminology. At present, some animal diseases have different names in different parts of the country. This situation not only causes confusion, but tends to hinder proper identification and the use of appropriate control measures. Poultry diseases, in particular, have many aliases. Some maladies now have misleading names. So-called "swamp fever" of horses often occurs in areas remote from swamps. Accordingly, the Bureau of Animal Industry is making a careful study of veterinary literature and current usage in the endeavor to bring about, by means of the charts, a more uniform use of preferred names.

In those diseases, such an anthrax, which are transmissible to man, the charts will contain suitable warnings so that carcasses may be disposed of with maximum safety to persons handling them. The charts are to be made attractive for display purposes notwithstanding the portrayal of diseased conditions. This consideration is hoped to result in the use of the charts on bulletin boards of live stock exchanges, post offices, and other places where they will be widely seen. For instance, the picture of a dead beef animal on a pasture, if displayed at a live stock market, is a reminder that preventive treatment or other veterinary attention would have saved such an animal, with resulting increased benefits to various industries and the consuming public.

The tentative size of the charts is approximately 15 by 18 inches, which is deemed convenient for indoor use, for which they are primarily intended. The series is to include principally those diseases that cause serious losses, together with some that are not at present very well known. The list tentatively includes anthrax, Bang's disease, encephalomyelitis, infectious anemia, mastitis, pullorum disease, and range paralysis.

PRELIMINARY ANNOUNCEMENT

The Bureau emphasizes that this notice is a preliminary announcement and that the charts will not be available for distribution until later in the year. The announcement is made so that members of the veterinary profession may make recommendations on names of diseases to be included and may otherwise express opinions for the development and use of the material so that it may be of maximum educational value. There has long been sentiment throughout the veterinary profession that the public should be more fully informed on animal-disease problems and the services of veterinarians in dealing with them. The proposed series of charts provides an opportunity for interested persons to work with the Bureau to these ends.

Regarding plans for distribution, a moderate edition will be distributed free. A further supply, according to present plans, will be available for purchase, singly or in sets, at nominal cost from the Government Printing Office.

Foot-and-Mouth Disease Abroad

EUROPE'S prolonged and serious attack of foot-and-mouth disease has subsided somewhat in places but, at the same time, it has taken in some new territory and increased in other places.

For a couple of years, Hungary had been listed as free from foot-and-mouth disease, but the disease recently broke out again and has been spreading. Therefore, that country is now back again on our quarantine list.

The disease also has spread considerably in Austria following the union of Germany and Austria and the opening of the borders between those two countries to the movement of live stock.

A cable report, received on May 27, indicated that the disease had made its appearance in the southern portion of Sweden.

With these highlights from the trend in the foot-and-mouth disease situation, the present status of the disease in Europe and the rest of the world may be briefly summarized as follows:

Five countries in northern Europe—Norway, Latvia, Esthonia, Lithuania and Finland—were still free from the disease at the time of latest reports to the Bureau.

Three other countries—Denmark, Great Britain and Switzerland—*have* foot-and-mouth disease. The two first-mentioned countries have been keeping down the infection by slaughtering diseased and directly exposed susceptible animals. Even so, they have been reporting new cases and Switzerland, which began with the slaughter method, has had to give it up because of the shortage of milk and the loss of so many valuable breeding cattle.

Aside from those five countries in northern Europe that are free from the disease—and those two countries that keep it down fairly well by the slaughter method—all the rest of Europe is badly infected.

Germany has foot-and-mouth disease throughout the country, except across the Polish corridor in east Prussia. The disease has been increasing in the eastern part of the country, but possibly slowing up somewhat in the western part.

Italy had the disease last fall and winter, and it has been getting worse during recent months.

France reports fewer cases, but the infection still covers nearly the entire country.

In Belgium and Holland the disease has slowed up somewhat, but both countries still have much widely scattered infection.

In Czechoslovakia the disease broke out recently and has spread all over the country.

A good share of the rest of the world also is infected with foot-and-mouth disease. Here's the roll-call of the other major continents:

Africa—South Africa had been free for several years until a small outbreak in December. She took strenuous measures to stamp out that outbreak and may be safely free again in the next few months, but all of the rest of Africa is infected, either with foot-and-mouth disease, or rinderpest.

South America—Latest reports indicate that Colombia, Venezuela and the Guianas continue free; that Ecuador had serious outbreaks in two districts, and that the rest of South America had simmering infections.

Asia—Most of Asia has either foot-and-mouth disease, or rinderpest, or both.

J. R. M.

COMMENCEMENTS

Ontario Veterinary College

The following candidates received the degree of Bachelor of Veterinary Science at the Convocation of the University of Toronto, May 13, 1938, according to an announcement received from Dr. C. D. McGilvray:

F. J. Allan
J. R. Andrews
John Arbuthnott
J. F. Blacklock
J. K. Bone
J. C. Bradshaw
K. E. Brown
D. R. Burley
M. K. Clugston
A. A. Connel
J. A. Edgett
R. W. Elliott
J. G. Filson
Geraldine E. Fritz
L. W. Groves
T. A. S. Hays
C. J. Hollister
R. T. Ingle
J. M. Isa
H. A. Janson
W. D. Jones
Melville Knox
W. E. LaGrange
L. W. Lobsinger
J. G. Mackay
W. P. Mackenzie
J. H. Martyn
N. L. McBride
W. A. McCracken
D. G. McKercher
M. E. Merkley
M. F. Miller
A. G. Misener
C. A. Niles
E. T. Padfield
Moss Parsons
H. C. Poulin
J. E. Rattray
W. C. Reid
L. J. R. Richardson
V. W. Ruth
R. C. Schofield
J. N. See
L. H. Tovell
A. D. Traskus
W. S. Wakefield
J. S. Webster
K. F. Wells
J. M. Woodcock
R. H. Wright

Prizes were awarded to members of the graduating class as follows:

Honor Standing

Gold Medal for highest aggregate standing—L. W. Groves, of North Platte, Neb.

Andrew Smith Memorial Medal

W. E. LaGrange, Frelighsburg, Que.

Helen Duncan McGilvray Prize

C. A. Niles, Ruburn, Maine

Bacteriology

R. T. Ingle, Guelph, Ont.

Canadian Army Veterinary Corps Prize

K. E. Brown, Ottawa, Ont.

Kansas State College

The seventy-fifth annual commencement exercises of Kansas State College were held at Manhattan, May 30, 1938. In the Division of Veterinary Medicine, Dean Dykstra reports that 43 candidates received the degree, Doctor of Veterinary Medicine:

Jacob Antelyes
Vincent Clinton Bevenue
*Arthur Randolph Blythe
*Grafton Diddle Bowers
*Hugh Burkett Campbell
*Francis Adam Caspar
*Donald Louis Cassidy
*Merwyn Pierce Chapman
*George Edward Cottral
*Joseph Abraham Farney
*Merle LeRoy Farris
Joseph George Feinberg
*Lon E. Foote
*Merwin Jack Gregg
*John Steward Haley
*Hyman Joseph Harkavy
*David Jacobson
*Sidney Mercer Levine
*Ernest Leland Love
*Ian Currie McDonald
*Raymond Leroy McMahan
*George Badsky Maichel
Lloyd Burdette Mobiley
*Wilbur Henry Mowder
*Victor Thomas Oliver
*Hyman Henry Parrell
*Elton Vernon Parsons
*Charles Bernard Randall
Harold Daniel Rodabaugh
Andy John Sargent
*Maurice Anthony Schooley
Albert V. Schwartz
LaGrande Clarence Shaw
*Clarence Franklin Shelby
*Warren Lang Skinner
William Daniel Smith
*Joseph Robert Sterling
Cleon Orel Tackwell
*Raymond Woodrow Wann
*Wayne Ross Witter
*Herald George Wixom
Tit Wong
James Elias Ziegler

High honors were awarded to Charles Bernard Randall. Honorary recognition was also given to Jacob Antelyes, David Jacobson and Herald George Wixom. Dr. LaGrande Clarence Shaw completed the requirements for his degree and received his diploma at the close of the first semester, January 29, 1938.

At the Alumni Symposium held in the College Auditorium, on May 28, Dr. William A. Hagan (K. S. C. '15), Dean of the New York State Veterinary College at Cor-

*Awarded commission as lieutenant in Veterinary Officers Reserve Corps.

nell University, delivered an address on "The Veterinarian's Contribution to Human Welfare." At the commencement exercises Dr. Hagan received the honorary degree of Doctor of Science.

Dr. Roger Paul Link (Iowa '34) received his M. S. He majored in physiology and presented a thesis on "Glucose Tolerance in Equidae."

Université de Montréal

Eleven graduates from l'École de Médecine Vétérinaire de la Province de Québec, Université de Montréal, received the degree of Doctor of Veterinary Medicine, at the commencement exercises, held on May 27, 1938. They are:

Hermel Chamberland
Wilbrod Dufour
Roland Filion
Clement Fortier
Antonio Fraser
Edouard-Ernest Jasmin
Benoit Laurence
Jean Paquin
Marcel Picard
Gustave Porlier
Paul Villeneuve

Edouard-Ernest Jasmin was graduated with great honors and Hermel Chamberland, Wilbrod Dufour, Roland Filion and Paul Villeneuve with honors.

Colorado State College

The annual commencement exercises at Colorado State College were held May 31, 1938. The address was delivered by Dr. Alexander Stoddard, Superintendent of Schools for the city of Denver. The following candidates, presented by Dean I. E. Newsom, received the degree of Doctor of Veterinary Medicine:

Charles S. Cassias
Thomas M. Eagle
Henry P. Galloway
Fred B. Haynie
Ivin M. Jackson
Lawrence Kelley
Jack A. King
William E. Kraus
Thomas M. McIntyre
Roy A. Nipko
William D. Pounden
Harold Propp
Alfred C. Ruggles
Edwin J. Smith
Robert Tolley
John Williams

John Williams had the highest scholarship record for the Division of Veterinary Medicine. He and William Pounden were elected to the honorary society of Phi Kappa Phi.

John Thimming was granted his degree at the close of the summer school in 1937.

Alabama Polytechnic Institute

The sixty-sixth annual commencement exercises of the Alabama Polytechnic Institute were held at Auburn, May 30, 1938. The commencement address was given by David Wistar Daniel, A.B., A.M., Litt.D., Dean, School of General Science, Clemson Agricultural College, Clemson, S. C. Thirty-two students were awarded the degree, Doctor of Veterinary Medicine, as reported by Dean I. S. McAdory:

Howell Cobb Arrendale
James Thomas Atkinson
Joe Ford Baxter
Victor Hugo Blumberg
Thomas Edison Bonds
Zackie Harlin Bridges
Frederick Porter Caughman
Max Davidson
William Douglas Dean
Lester Arvel Deese
William Elmer Donavan
Francis Oliver Garrett, Jr.
Abraham Theodore Grayev
Joseph William Hobbs
Robert Andrew Johnson
William Edward Jones
Hunter Ernest Kendall
John Charles McNeil
Rufus Oliver Moore, Jr.
Frank Marion Phillippi, Jr.
Daniel William Pittman
John James Powell
Bert Reinow
Virgil Benton Robinson
David Dallas Ruch
Marvin Herman Scham
Harold Albert Servais
Abraham Lincoln Stewart
William Herman Storey
Hal Wooten Tanner
Benners Brasfield Vail, Jr.
Paul Richard Yarbrough

A. and M. College of Texas

The sixty-second annual commencement exercises of the Agricultural and Mechanical College of Texas were held June 3,

1938. The commencement address was given by Ovid Wallace Eshback, Personnel Department, American Telephone and Telegraph Company, New York, N. Y. The following students in the School of Veterinary Medicine were awarded their degrees:

Dan James Anderson
*Willis William Armistead
Jamie Wilson Barton
Edwin A. Beckcom
William T. Bell
Paul Boren Blunt
George R. Burch, Jr.
Charles William Chadwick
Vernon Davis Chadwick
Russell R. Davis
John W. Evans
*Carl Fink
Robert Dean Franks
Hardin Edward Gouge
Raymond T. Hander
Robert Henry Hartman
James Walter Heaton, Jr.
Doyle W. Hennessee
James E. Hill
William Warren Judson
John Tom Kirby
William Thomas Kirk
*Abe Levy
Henry Keller Maier
*George Bernard Meyer
Andrew A. Moore
*Harry B. Naylor
*William Dan Roberts
Darrell Bernard Sprott
Charles W. Tate
John Wilkey Taylor
George Oliver Thomas, Jr.
Paul M. Turman
Asa L. Walker
Louis Theron Dawe
George Emery Dershem
Alden T. Eash
George James Fohey
Donald James Francisco
Arthur Lawrence Green
George William Green, Jr.
Charles Fred Helmboldt
Wilbur Carlton Hirschey
Wallace Victor Hornbacher
John Herman Martin
George Russell Moore
Albert Conrad Nagle
James Dennison Nundy
Paul Frederick Reichert
Jean Elizabeth Reindel
Robert Smith Rey
William Francis Riley
James Flanders Roberts
William James Sherwood
Luke Richard Sinclair
William Henry Stroup
Clifford Westerfield
Edward Samuel White
Alan William Winter
Donald Albert Wright
Robert Moses Zinober

The Michigan State Veterinary Medical Association prize of $25, to the senior who has done the best work during his course, was awarded to Arthur L. Green, and the Veterinary Faculty Prize, offered annually to the outstanding second-year student, was awarded to Joseph S. Ruhe.

Richard D. Bertotti, Lloyd E. Jameson and Earl J. Wuellner received the degree of Doctor of Veterinary Medicine at the close of the summer session in 1937.

Michigan State College

The eightieth annual commencement exercises of Michigan State College were held June 13, 1938. Frank Murphy, Governor of Michigan, gave the commencement address, "Morality and Social Progress." Dean Ward Giltner presented 35 candidates for the degree, Doctor of Veterinary Medicine. They are:

Clarence Carl Bach
Raymond Adam Bankowski
Walter Brisben Bradley
Nathan Ronald Brewer
Basil Carclay
Frank A. Carter
Maurice Eugene Clark
Charles Russell Corson

*Distinguished seniors, having no grade below "C" and having made a grade point average of not less than 2.25 per credit hour for the second semester. (Three grade points per credit hour is a perfect record.)

State College of Washington

The annual commencement exercises of the State College of Washington were held June 6, 1938. The College of Veterinary Medicine presented 38 candidates for the degrees of Bachelor of Science and Doctor of Veterinary Medicine:

Walter A. Anderson
Ralph Owen Anslow
Robert Douglass Bullock
*Nathan Walter Burg
Howard F. Carroll, Jr.
Wilfred M. Crow
Thais A. de Tienne
Burman John Elander
Robert G. Elmore
Horace Candrian Field
Dell C. Finch
Robert Lyle Griffith, Jr.

*Completed their work for their degrees, either during the summer session of 1937, or at the end of the first semester of the 1937-38 college year.

Orville John Halverson
William R. Hulbush
Ross Harrison Hurt
Klemens Frank Johnson
Norman E. Johnson
George L. McQueen
E. Laverne Maurer
*Fred Dry Maurer
William Menaul
*Bert Menig
Warde Ferris Meyer
Edward Wray Morehouse
Robert Francis Mowrer
Wilbert Charles Nichols
Leonard L. Ogburn
Norman Olaf Olson
William Frederick Parker
Charles Whipple Priddy
Joseph Thaddeus Riker
H. Gordon Rockwell
John W. Safford
Arthur P. Schneider
Richard Duey Shuman
Blair A. Stevens
*Walter William Stiern
Edward A. Tugaw
James Daniel Twohig
John Dominick Vietti
Charles Joseph Whitehead
*Jack Edward Wittrock

Richard D. Shuman and John D. Vietti received their degrees with high honors and W. F. Parker and Charles J. Whitehead received theirs with honors, according to Dean E. E. Wegner.

Ohio State University

The sixtieth annual commencement exercises of the Ohio State University were held on June 13, 1938. The College of Veterinary Medicine presented 54 candidates for the degree, Doctor of Veterinary Medicine, as follows:

Joseph Herbert Adams
Russell Albert Barber
Willard Jacob Barga
Earl Baumwell
Ralph Joseph Becher
Robert Edward Bittel
Charles Richard Border
Earl Fredrick Brown
Fred Beck Coates
Eugene William Cole
John Robert Curtis
James Hervey DeGroodt
Charles Benton Dibbell
Milton Warren Firestone
William James Friderici, Jr.
Ralph Wells Greeno
Roger Grossman
James Erwin Guthrie
Russell William Hammermeister
Elwood J. Hoffert
Wilson Samuel Hynes
Robert Loomis Jimison
John Frederick Kantzer
Sidney Leon Kaplan
Fred Joseph Kingma
Meyer Koch
Seymour William Kolodny
John Raymond Krohn
Raymond Richard Lewis
Adolph Martin Loch
Carl Lohmeyer
William Lewis Lukens
Neal Drumheller Lusk
Philip Charles Manly
Isaac Homer Maxwell
Glen Howard May
Robert Albert Moody
Leo Francis Mundy
George Robert Oldham
Herbert Ivan Ott
Charles Haig Ozanian
Ralph Heighton Packer
Stanley Edward Peters
Morris Pollard
Robert Andrew Rands
William Gerald Raudabaugh
James Frederic Robertson
Harry Louis Sherman
John Ray Smith
Paul Albert Soldner
William Edward Welbourn
John Jacob Wickham
Joseph Albert Wiley

The above candidates were presented by Dr. Walter R. Hobbs, Acting Dean, in the absence of Dean Oscar V. Brumley, who had to be away from Columbus on A. V. M. A. business the day of the commencement exercises.

Iowa State College

The annual commencement exercises of the Iowa State College were held June 14, 1938. The degree, Doctor of Veterinary Medicine, was conferred upon the following students:

Clement I. Angstrom
Myron S. Arlein
Gerald C. Bek
George O. Berry
Wayne Binns
Arthur C. Brown
Elliott A. Butler
*Theodore T. Chaddock
Nelson D. Crandall
James M. Cullison
Charles H. Cunningham
Jon C. de Holl
James A. Fitch
Jack H. M. Gregory
*Luther M. Griffin
Chester E. Guthrie
George G. Hartle

*Received degree, March 19, 1938.

Leland S. Hughes
Kenneth W. Klaus
*Andrew Koostra
Maurice C. Larson
Frank J. Linn
Willis B. McCannon
Jon A. McCurdy
Aryle M. McDermid
Warren R. Marks
Walter E. Merritt
Robert J. Miller
Raymond A. Miner
Leonard A. Moen
John A. Morton
Lowell A. Osborn
Nolta J. Perley
John A. Randle
Earle C. Ritter
Ralph E. Ruggles
Thomas A. Schneckloth
Robert M. Scott
Roger C. Scott
†Ludwig Sender
Robert W. Short
Harry A. Snelbaker
Calvin Swick
Burton C. Thomson
Vale U. Thomson
Edward H. Von Glan
Benjamin F. Ward
Keith Wiser
Roy F. Zook

Nelson D. Crandall, Chester E. Guthrie, Andrew Koostra and John A. McCurdy also have the degree, Bachelor of Science. Theodore T. Chaddock and Charles H. Cunningham have the degree, Master of Science, as well, according to information supplied by Dean Murray.

Leland S. Hughes was the honor student in veterinary medicine, thereby winning the George Judisch Award. This award consists of the initiation fee and membership dues in the A. V. M. A. for five years.

The winners of the G. G. Graham Prizes, awarded to outstanding students in clinical medicine, were John A. Randle, first, and Wayne Binns, second.

Thirty-one of the graduates are going into practice and 18 into federal, state and institutional work.

Cornell University

The seventieth annual commencement exercises of Cornell University were held June 20, 1938. Dean W. A. Hagan, of the New York State Veterinary College, presented 29 candidates for the degree, Doctor of Veterinary Medicine, as follows:

Robert Oriett Allen
Wilson George Collins
Harold Keim Cooper
Walter Roland Dennis
Andrew Malcolm Draper
John Wyckoff Earl
Samuel Graves Eddins
Harry Jacob Fallon
Benedict Victor Favata
William Edward Glindmyer
Henry Earle Grossman
Thurston William Haller
James Edwin Helyar
Robert Francis Jewett
Jack Milton Klar
Robert Francis Jewett
Jack Milton Klar
Thomas Lawrence
Marion Lucile Leighton
John Wilson Miller
Alexander Morris
Robert Bernard Morris
Jerome Herman Reisman
Walter Edward Relken
Stephen James Roberts
James Arling Sasmor
Harry Schiller
Norman Edward Seibert
George William Snook
Charles Theodore Whitney
Alan Wilbur Wright

Honor Day exercises were held May 16, 1938, with Dean Hagan presiding. Dr. Frank H. Miller, former trustee of Cornell University, of New Rochelle, N. Y., delivered the opening address and President Edmund Ezra Day awarded the prizes as follows:

Addison D. Merry Prize

Given by Dr. A. E. Merry (Corn. '06), Syracuse, N. Y., for the best work in veterinary anatomy.

First Prize ($30) .....Ralph E. Loomis, '40
Second Prize ($20).....Theodore Allen, '40

Honorable Mention: Ralph L. Gangarosa, '40, Rebecca Gifford, '40 and Norman E. Skinner, '40.

Jane Miller Prize

Given by Dr. Frank H. Miller (Mont. V. C. '87), New York, for the best work in veterinary physiology.

First Prize ($25) ....Edwin J. Sunderville, '39
Second Prize ($15).....Wilson B. Bell, '39

Honorable Mention: Raymond Fagan, '39, Robert Ferber, '39 and Isidore I. Sprecher, '39.

Charles Gross Bondy Prize

Given by Mr. Richard Bondy, New York, for the best work in the courses in practical medicine and surgery of the small animals.

First Prize ($25) .....Walter R. Dennis, '38
Second Prize ($15).....Milton H. Covert, '38

Honorable Mention: Alexander Morris, '38 and Robert B. Morris, '38.

†Received degree, August 28, 1937.

Anne Besse Prize

Given by Miss A. B. Jennings, New York, for the best work in medicine and clinical diagnosis.

Prize ($40) .....George W. Snook, '38

James Gordon Bennett Prize

Given by Mr. James Gordon Bennett, New York, for the students who show the greatest humaneness in handling animals, with special reference to the use of anesthesia.

Prize ($40) .....John W. Earl, '38
Honorable Mention: James E. Helyar, '38.

Horace K. White Prize

Given by Mr. Horace K. White, and his sons, of Syracuse, for the students whose academic record for the entire veterinary course stand highest.

First Prize ($75).....Alexander Morris, '38
Second Prize ($25)....Stephen J. Roberts, '38
Honorable Mention: Robert B. Morris, '38, John W. Earl, '38 and Benedict V. Favata, '38.

University of Pennsylvania

The 182nd annual commencement exercises of the University of Pennsylvania were held on June 15, 1938. Dean George A. Dick, of the School of Veterinary Medicine, presented 30 candidates for the degree of Doctor of Veterinary Medicine:

*Richard Gilpin Buckingham
*Edward Campbell Bulger
Irving Gering Cashell
Robert Frederick Chrisman
David Lukens Coffin
Morris Seifert Cover
Frank James Davies
Mary Josephine Deubler
Leonard Pearson Deubler
*Marvin Suloff Ebright
Charles Benjamin Frank
*Philip LeClerc Gauntt, Jr.
Raymond Bruce Gochenour
Samuel Leighton Haines
Jack Oliver Knowles
Raymond Edward Larson
John Michael Lee
Arthur Lancaster Leibert
James Herbert Mark
Howard Milton Mershon
Ross Taylor Mickle
Leonard Mirsky
William Andrew Nusser
Thomas Brodhead Powell
Melville Collins Rawnsley
Robert Francis Rochfort
William Charles Todd, Jr.
Morris John Weiner
*Armour Curie Wood
Jordan George Woodcock

The J. B. Lippincott Prize of $100, for the highest general average in examinations during the four years, was awarded to Armour C. Wood.

The Jeannette Blair Prize of $50, for the best work done in the Small-Animal Clinic, was awarded to Philip L. Gauntt, Jr.

The 1930 Class Prize of a book, to the member of the senior class, who, in the judgment of the faculty of the School of Veterinary Medicine, was best qualified to receive it, was won by Edward C. Bulger and Marvin S. Ebright.

The Suburban Cattle Breeders' Association Prize of $25, to the member of the sophomore class who attained the highest average in the course of physiology, was awarded to Martin M. Kaplan.

The Anatomy Prize of the Class of 1926, to the member of the sophomore class for the best work done in the courses of anatomy, was awarded to Walter A. Hughes.

*With honors.

Automobile-Trailer-Laboratory Speeds Up Bang's Disease Testing

For some months, Bang's disease forces in Michigan have been using an automobile-trailer-laboratory in some areas to test the blood samples taken from the cattle tested.

As a result of our experience with the trailer-laboratory, the U. S. Bureau of Animal Industry is having three more trailer-laboratories built to give the plan a further trial. One will be put into use in Michigan, a second in Wisconsin, and a third in Louisiana.

The trailer-laboratories are suitable for places where the infection is light, and where the central state laboratory is a long distance away; also in sections where the testing is on an area basis.

The testing laboratories on wheels are set up at some central point where they can be hooked up with water and electric connections and where there is a sanitary sewage disposal. Then, the testing crew moves out into the surrounding country to gather blood samples.

J. R. M.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The March meeting of the Veterinary Medical Association of New York City was held at the Hotel New Yorker, on Wednesday evening, March 2, 1938.

Mr. Edward Greene, General Manager, National Better Business Bureau, was introduced by our President, Dr. R. S. MacKellar, Jr., and gave us a very instructive talk on "Self-Regulation of Business Practice." Mr. Greene brought out some very interesting facts about the necessity of honestly representing the products that are to be sold, in order to avoid unfair competition, of which the public is frequently a victim. Due to misrepresentation and falsity in advertising products, difficulty is oftentimes caused for an entire industry. It is under such conditions that the Better Business Bureaus can do a great deal in helping an industry regain the confidence of the public. Mr. Greene said further:

> We are advised that research standards for the quality of dog foods are being established. Considering the tremendous public interest in prepared dog foods, the procedure is commendable. We are not qualified to pass opinion on professional accomplishments, but we are impressed with the steps that are being taken to improve hospitalization for small-animal pets.

Mr. Greene said further:

> Since the Better Business Bureaus are established by business to deal with certain business practices, we are not concerned with professional practices unless they can be shown to be detrimental to public interest and were promoted by advertising. Nevertheless, we realize that ethical stability is a very important factor in maintaining and inspiring the constructive welfare of those engaged in various professions. For this reason, we would like to have you keep in mind that our services are available to anyone who desires to make a complaint which comes within the scope of our activities.

Mr. H. J. Hutchinson, secretary of the Kennel Food Supply Company, Fairfield, Conn., spoke on the topic of the production of dog foods. He gave a very complete résumé of the history of the industry since 1905. He mentioned the formulae of several dog foods manufactured by his company. He complimented the American Animal Hospital Association for the work which that organization is doing through its Committee on Foods, in testing and approving dog foods prepared by various companies.

Dr. M. L. Morris, chairman of the Committee on Foods of the American Animal Hospital Association, then gave a résumé of the procedures followed in testing prepared dog foods and outlined the requirements which are necessary for companies to meet in order to receive the Seal of Approval for their products.

A discussion followed, which was participated in by Drs. D. J. Mangan, J. Lebish, C. P. Zepp and H. Gordon. The members were greatly interested and appreciated the talks given by Mr. Greene and Mr. Hutchinson.

April Meeting

The April meeting was held at the Hotel New Yorker, on Wednesday evening, April 6, 1938.

President MacKellar introduced the speaker of the evening, Dr. Charles E. Fanslau, Director of the Veterinary Division of the Winthrop Chemical Company, who gave an address on the subject of "Diagnosis of Urologic Conditions." Dr. Fanslau gave the history of the development of skiodan over diodrast and pointed out the many advantages of diodrast over skiodan, such as more clearly defined shadows, smaller dosages, and also the fact

that diodrast passes through the body unchanged. No harmful effects should be expected from this product other than occasional slight urticaria, which will pass off in ten minutes to one hour.

This product is useful in the diagnosis of acute infections; ureteral calculus; permanent impairment of kidney function, as in pyonephrosis; absence of kidney, either congenital or acquired; and hypermotility leading to rapid emptying of the kidney.

Dr. Fanslau showed two reels of motion-pictures, which very clearly demonstrated the important points of his lecture and the uses and value of the products mentioned. The discussion which followed showed that the members were greatly interested in this method of diagnosis of urologic conditions.

MAY MEETING

The May meeting was held at the Hotel New Yorker, on Wednesday evening, May 4, 1938.

President MacKellar introduced the speaker of the evening, Dr. Israel Schwartz, member of the American Institute of Chemistry, American Chemical Society and American Pharmaceutical Society, whose discussion was "Urinalysis and the Significance of the Report."

Dr. Schwartz gave us the procedure and correct method for testing urine and then discussed the value of the findings, emphasizing the fact that a complete urinalysis is of great aid to the clinical diagnosis. Dr. M. L. Morris, Dr. E. R. Blamey and Mr. Greene took part in the discussion which followed.

J. B. ENGLE, *Secretary.*

SOUTHWESTERN MINNESOTA VETERINARY MEDICAL ASSOCIATION

The seventeenth regular semi-annual meeting of the Southwestern Minnesota Veterinary Medical Association was held at the City Hall, Saint James, on April 26, 1938, with a registered attendance of 58.

After President C. J. Gillespie called the meeting to order, an address of welcome was given by the mayor of Saint James. The report of the secretary-treasurer was read and approved, after which the following papers were read and discussed:

"Diseases of Sheep and Sheep-Feeding Problems," by Dr. L. D. Frederick, of Chicago, Ill.

"The Pharmacology of the Autonomic Nervous System and Biological and Biochemical Tests of Interest to the Veterinarian," by Dr. M. H. Roepke, University Farm, Saint Paul.

Dr. A. H. Schmidt, of Triumph, made some remarks relative to increasing the membership of the state association. It was voted to appoint a man in each county to work on this problem.

The following officers were elected for the ensuing year: President, Dr. T. F. Bartley, of Vesta; vice-president, Dr. C. L. Tompkins, of Redwood Falls; secretary-treasurer, Dr. L. E. Stanton, of Jackson, and member of the Board of Trustees, Dr. H. F. Beardsley, of Lakefield.

A banquet was held at the Watonwon Cafe following the meeting, with Dr. Gillespie acting as toastmaster.

L. E. STANTON,
Secretary-Treasurer.

Phi Zeta Initiation at Iowa State

The Iowa State College chapter of Phi Zeta, Honorary Society in Veterinary Medicine, held its annual initiation ceremonies on May 31. Following the initiation, a banquet was served to 33 members. Dr. G. R. Fowler, president of the local chapter, presided as toastmaster. Short talks were given by the honorary members. The following were elected to active membership.

Seniors: Myron S. Arlein, Gerald C. Bek, Arthur C. Brown, Charles H. Cunningham, Leland S. Hughes, Maurice C. Larson, John Alan McCurdy, John A. Morton and John A. Randle.

Juniors: L. Meyer Jones, Lester J. Gorman and C. Laurel Telleen.

At the same meeting, Drs. F. M. Wilson, of Mechanicsville, Iowa; R. C. Moore, of Dunlap, Iowa, and F. Rosenbusch, of Buenos Aires, Argentina, were elected to honorary membership.

F. E. W.

NECROLOGY

FRANK URICH FERNSLER

The untimely death of Dr. Frank U. Fernsler took place, on May 1, 1938, at his home, in Lebanon, Pa. For some months he had been affected with heart disease and subsequent complications hastened his departure at the age of 59 years.

Dr. Fernsler was a native of Lebanon, attended its public schools, was graduated from Franklin and Marshall College, in 1900, and from the School of Veterinary Medicine, University of Pennsylvania, in 1902. He joined his father in practice and continued an uninterrupted period of valuable service to owners of animals in Lebanon and adjoining counties. A large clientele, the Pennsylvania Bureau of Animal Industry and fellow practitioners in consultation recognized his abilities. He was keenly interested in the advancement of his profession.

Dr. Fernsler joined the A. V. M. A. in 1908. He was a member of the Pennsylvania State Veterinary Medical Association, Mount Lebanon Lodge, No. 226, F. and A. M., other Masonic organizations, and the Lutheran Church. He was identified with the Lebanon County Agricultural Fair Association and with Horse Show committees. He gave time and effort generously to civic matters. He is survived by his widow, a daughter, three sons and his mother.

T. B. L.

JOHN MOTT BUCK

Dr. John M. Buck died at his home in Beltsville, Md., May 2, 1938. He had been in the best of health up to the moment of an attack of apoplexy which resulted fatally in a few hours.

Born November 17, 1878, on a farm at Acton, Maine, Dr. Buck was an alumnus of the Brewster Free Academy at Wolfeboro, N. H., class of 1900. During the following four years, he was employed in Boston. In 1904, he enrolled as a student in the College of Veterinary Medicine at Ohio State University, from which he was graduated in 1907.

Immediately thereafter, Dr. Buck was appointed as veterinary inspector in the U. S. Bureau of Animal Industry, and was assigned to meat inspection at Chicago, but was soon transferred to Kansas City. He served at that station until 1909, when he was designated by Dr. J. R. Mohler, then chief of the Pathological Division, to report for work in his laboratory at Washington, D. C. There he participated in research work for 19 years. Among the animal disease projects which engaged his attention during this period may be mentioned those concerned with the diagnosis, prevention and control of blackleg, glanders, dourine, foot-and-mouth disease, and Bang's disease.

Starting in 1916, Dr. Buck was assigned to investigate contagious abortion, a project which engaged his attention up to the time of his death. He contributed many outstanding scientific papers on this subject and was frequently called upon to address meetings of both farmers and veterinarians to discuss this disease, especially from the standpoint of conferring immunity during calfhood by vaccination with a strain of *Brucella abortus* of low virulance which he had isolated and experimented with on an extensive scale before advocating its use in farm herds.

Dr. Buck was transferred to the Experiment Station of the Bureau at Bethesda, Md., as Assistant Superintendent in 1928. When the Animal Disease Station at Beltsville was ready for occupancy, this phase of the Bureau's activity was moved there. Only a few months ago, he was promoted to

the position of Superintendent at that Station, and it was there that he died at the peak of his usefulness. He was buried at his old home in Milton Mills, N. H.

Dr. Buck joined the A. V. M. A. in 1913. He was a member of the National Association of B. A. I. Veterinarians and the Twelfth International Veterinary Congress. Besides his widow, he is survived by two brothers and a niece. Dr. Buck was extremely modest and highly conscientious. As a husband he was most devoted, as a friend ever loyal. As a member of the staff of the Bureau of Animal Industry he was an unusually efficient servant of the live stock interests of the country for 31 years.

F. B. H.

JAMES A. LEE

Dr. James A. Lee, of Loraine, Ohio, died in Saint Joseph's Hospital, May 26, 1938, aged 82 years. He was a graduate of the Ontario Veterinary College, class of 1885. Until twelve years ago, he practiced at Belleville, Ohio, but retired after coming to Loraine. He is survived by his widow.

JAMES J. MILLER

Dr. James J. Miller, of Medford, Ore., died on May 27, 1938, following an emergency operation for appendicitis.

Born at Pine City, Wash., October 31, 1912, Dr. Miller attended the Amber (Wash.) High School and then entered the State College of Washington. He was graduated in 1936 and, for the past 18 months, had been stationed in Medford as CCC Veterinarian.

Dr. Miller joined the A. V. M. A. in 1936. He is survived by his widow (née Violet B. Erdman), one son and his parents.

V. B. M.

VINCENT JAMES ROBINSON

Dr. Vincent J. Robinson, of Minneapolis, Minn., died on May 28, 1938, following an illness of ten weeks due to coronary occlusion with pulmonary complications.

Born at Harlan, Iowa, October 12, 1881, Dr. Robinson attended local grade and high schools before entering the State University of Iowa, which he attended for two years. He then entered the Chicago Veterinary College and was graduated in 1909. He located at Atlantic, Iowa, and practiced there until 1926, when he moved to Minneapolis.

Dr. Robinson joined the A. V. M. A. in 1924. He was a member of the Minnesota State Veterinary Medical Society and of the Elks Lodge. He is survived by his widow (née Belle Hardman), four daughters, one son, his parents, two sisters and two brothers, one of whom is Dr. J. L. Robinson (Chi. '14), of Des Moines, Iowa.

J. P. F.

NOEL JOY HOLMES

Dr. Noel J. Holmes, of Hull, Que., Can., died May 29, 1938. He was seized with coronary thrombosis while horseback riding and death overtook two hours later.

Born at Henley-on-Thames, England, December 17, 1885, Dr. Holmes received his early education in England (Brighton College) and came to Canada in 1903. He spent several years on a farm in western Canada and later entered the Ontario Veterinary College. Following his graduation in 1911, he engaged in general practice at Loverna, Sask. In 1926, he became associated with the Health of Animals Branch, Dominion Department of Agriculture, and served in the Meat and Canned Foods Division. For the past seven years, he had been connected with the Pathological Division and was a staff member of the Animal Diseases Research Institute.

Dr. Holmes joined the A. V. M. A. in 1934. He was a member of the Central Canada Veterinary Association, the Professional Institute of the Civil Service of Canada, and the Ottawa Valley Hunt Club. He is survived by three brothers and one sister.

T. M.

Our sympathy goes out to Dr. M. S. Shahan, U. S. Bureau of Animal Industry, Washington, D. C., in the death of his wife, Mrs. Helen Shahan, on April 16, 1938, and to Dr. F. A. Page, of Chicago, Ill., in the death of his wife, Mrs. Edith May Page, on April 27, 1938.

ARMY VETERINARY SERVICE

Regular Army

The promotion of 1st Lieut. Walter Smit, V. C., to the grade of captain, with rank from May 1, 1938, is announced.

Captain Russell McNellis has been directed to proceed, at the proper time, to West Point, N. Y., and report to the Superintendent, U. S. Military Academy, for temporary duty for the purpose of accompanying the detachment of Field Artillery from West Point to Tobyhanna, Pa., for the period June 15 to July 15; upon completion of this temporary duty to return to his proper station, Washington, D. C.

So much of par. 3, S. O. 62, W. D. 1938, as assigns Colonel Robert J. Foster to additional duty as attending veterinarian, Fort McDowell, Calif., is amended so as to assign him to additional duty as attending veterinarian, Moffett Field, Calif., effective upon arrival in San Francisco, Calif.

Lt. Colonel John H. Kintner is detailed as attending veterinarian, Fort McDowell, Calif., in addition to his other duties at Fort Mason, Calif.

Lt. Colonel Raymond A. Kelser is directed to proceed on or about June 20, 1938, to Lexington, Ky., on temporary duty for a period of approximately seven days, for the purpose of attending the annual conference of officers engaged in Remount Division activities, and upon completion of this duty to return to his proper station, Washington, D. C.

The promotion of 1st Lieut. Donald C. Kelley, V. C., to the grade of captain with rank from June 1, 1938, is announced.

Veterinary Reserve Corps

PROMOTIONS

To Lieut. Col.: Elmer Lash, 1833 New Hampshire Ave. N. W., Washington, D. C.

To Captain: Rudolph Oscar Omdalen, 1160 E. Broadway, Louisville, Ky.

To 1st Lieut.: Wm. Hugh Pavey, 320 W. Main St., Xenia, Ohio.

NEW ASSIGNMENTS TO ACTIVE DUTY WITH CCC

1st Lieut. Elmer F. Finke, Fort Benning, Ga. 1st Lieut. Ray Seaborn, Indiana Dist., Fort Benj. Harrison, Ind. 1st Lieut. LeRoy Duane Cady, Fort Snelling, Minn.

TERMINATION OF ASSIGNMENT TO ACTIVE DUTY WITH CCC

1st Lieut. William J. Seagers, Schenectady, N. Y. 1st Lieut. Nathaniel Werrin, Hdqrs. Northern Dist., Indiana, Pa. Capt. Fay E. Broad, Indiana Dist., Fort Benjamin Harrison, Ind. Capt. Leo A. Hock, Ohio Dist., Fort Hayes, Ohio. 1st Lieut. Leonard Wilbut Hibbs, Fort Snelling, Minn. 1st Lieut. James J. Miller, Medford, Ore. (Died May 27, 1938.)

GLEANINGS FROM OUR CORRESPONDENCE

BIRTHS

To DR. and MRS. WM. R. KERMEN, of Pocatello, Idaho, a daughter, Mary Ann, June 17, 1938.

To DR. and MRS. E. L. HENKEL, of Fillmore, Utah, a son, April 12, 1938.

To DR. and MRS. GEORGE A. FERGUSON, SR., of Leaksville, N. C., a son, George Albert Ferguson, Jr., May 12, 1938.

MARRIAGES

DR. WESLEY O. KEEFER (O. S. U. '37), of Akron, Ohio, to Miss Jane Earhart, of Independence, Ohio, April 6, 1938.

DR. LEWIS A. DYKSTRA (Iowa '37), of Lena, Ill., to Miss Lennice Wright, of Ames, Iowa, at Ames, June 15, 1938.

PERSONALS

DR. JOHN MARTIN (Mich. '38) plans to enter general practice at Wabash, Ind.

DR. CARL S. STATES (O. S. U. '31), formerly of Sidney, Ill., has opened an office in Homer, Ill.

DR. R. A. MILLER (Ind. '17), formerly of Indianapolis, Ind., is now located at Jamestown, Ind.

DR. H. E. MCCUTCHAN (Iowa '36) reports a change of address from Ayrshire, Iowa, to Emmetsburg, Iowa.

DR. R. B. MCQUISTION (Gr. Rap. '17), formerly of Trout Creek, Mich., has located at Iron Mountain, Mich.

DR. WAYNE BINNS (Iowa '38) has accepted an assistantship with Dr. A. G. Gieske (Chi. '06), at Barrington, Ill.

DR. C. K. MADER (Ont. '32) is Milk and Food Inspector for the cities of Kitchener and Waterloo, Ontario, Canada.

DR. C. A. METZ (Corn. '36), who has been in practice at Joliet, Ill., for the past two years, has removed to Walnut, Ill.

DR. GEORGE J. FOHEY (Mich. '38) has succeeded to the practice formerly conducted by the late Dr. F. T. Cates, of Clio, Mich.

DR. ROBERT L. HUMNER (U. P. '34) has resigned from the faculty of Kansas State College and has returned to Knoxville, Tenn.

DR. GLEN L. DUNLAP (K. S. C. '28), who has been on the staff of the University of Illinois, at Urbana, is now located at Pearl River, N. Y.

DR. NATHANIEL WERRIN (U. P. '34), formerly of Wilkes-Barre, Pa., has opened a small-animal hospital at 408 South Twentieth St., Philadelphia, Pa.

DR. G. E. DERSHEM (Mich. '38) announces the opening of an office in the Carpenter Building, Roann, Ind., where he will conduct a general practice.

DR. CHARLES J. PARSHALL (Corn. '28), formerly of Brentwood, Calif., is now associated with Dr. W. E. Brandner (Colo. '26), at Petaluma, Calif.

DR. HUGH B. CAMPBELL (K. S. C. '38) is now associated with his father, Dr. J. O. R. Campbell (Chi. '07), in the latter's practice at Geneva, Ind.

DR. M. T. COX (O. S. U. '36) has resigned his position with the U. S. Bureau of Animal Industry and has entered private practice at Lakeview, Ohio.

DR. EMMETT K. LEDUNE (O. S. U. '29), son of Dr. J. D. LeDune (Ind. '09), of Carlisle, Ind., recently opened an office at 420 South Court St., Sullivan, Ind.

DR. J. D. KRESS (O. S. U. '35) is now engaged in general practice at Suffolk, Va. He served his connection with the U. S. Bureau of Animal Industry on April 1.

DR. F. A. BURLINGAME (Ont. '14) and his son, Dr. Forest Burlingame (Ont. '37), of Chesaning, Mich., have found it necessary to build a 24 by 36 addition to their hospital.

DR. C. M. CHRISTY (U. P. '18), of Brookville, Pa., left on May 23 for an extended visit in Greece. Dr. Christy will attend the Thirteenth International Veterinary Congress.

DR. H. L. ANDERSON (Ont. '16) has moved from Rockwell, Iowa, to Fayetteville, Tenn., where he will be associated with Dr. R. L. Whitaker (McK. '17) in general practice.

DR. R. P. HUNTER (Ind. '15), of Edinburg, Ind., distinguished himself on May 10, by extinguishing a shingle-roof fire that threatened the historic Tilford Place in Edinburg.

DR. H. P. WESSELS (Iowa '36), who has been assisting Dr. A. G. Gieske (Chi. '06), of Barrington, Ill., the past year, has purchased the Tri-City Animal Hospital at Geneva, Ill.

DR. L. F. WORKMAN (McK. '14) has returned to his practice at West Point, Ill., after a short period of service in the U. S. Bureau of Animal Industry at East Saint Louis, Ill.

DR. M. M. BROWN (U. S. C. V. S. '13) resigned from the service of the U. S. Bureau of Animal Industry on April 1 and has resumed general practice at Marion, Va., his home town.

DR. G. A. STURM (Mich. '26), of Bad Axe, Mich., was elected president of the local Lions' Club for the year beginning June 1. Dr. Sturm has been in general practice at Bad Axe for twelve years.

DR. A. E. HARDING (Ont. '16), Whiteside County (Ill.) Veterinarian, has received a partial restoration of the salary he received before the depression, when salaries were drastically reduced.

DR. J. E. LAIDLAW (Ont. '94), of Bluffton, Ind., suffered a gash on his right hand and a slight brain concussion when his coupe overturned near Bluffton, following a collision, the latter part of May.

DR. G. R. OLDHAM (O. S. U. '38) was appointed City Veterinarian in the Health Division, City of Dayton, Ohio, effective June 1. He succeeds Dr. Creighton Nunn (O. S. U. '22), who resigned on April 1.

DR. C. R. PASTORS (O. S. U. '31), who was engaged in Bang's disease eradication with the U. S. Bureau of Animal Industry, has resigned and taken over the practice of the late Dr. S. C. Neff, at Staunton, Va.

DR. J. P. MCCOY (Ont. '01), of Minden City, Mich., is vice-president of the Minden City State Savings Bank, treasurer of the Minden City Board of Education, and has been clerk of Minden Township for 35 years.

DR. A. R. THEOBALD (O. S. U. '24), of Cincinnati, Ohio, served as chairman of a committee of veterinarians who looked after the welfare of the animals exhibited at the Pet Show held in Cincinnati on May 21.

DR. CHARLES F. RUNNELLS (O. S. U. '30), formerly of Newark, Ohio, who has been in the employ of the U. S. Bureau of Animal Industry, on tuberculosis eradication, for about six months, has opened an office in Saint Clairsville, Ohio.

DR. J. W. OLTMANNS (Chi. '16), of Watseka, Ill., is reported to be recovering from an injury sustained while attending a professional call on a farm near Watseka. He was kicked on the left thigh by a horse he treating, the first accident of this kind that has occurred to him in 25 years of practice.

DR. E. M. DICKINSON (O. S. U. '27), who has been with the University of California as Extension Specialist in Poultry Pathology, has accepted a position with the Oregon State College as Associate Professor of Veterinary Medicine. He will take up the work which the late Dr. W. T. Johnson was doing in poultry diseases.

BUREAU TRANSFERS

DR. H. S. MILLER (Geo. Wash. '14), from Winchester, Va., to Richmond, Va., as assistant inspector-in-charge of tuberculosis and Bang's disease eradication.

DR. SAMUEL O. BENSON (Mich. '29), from Fort Worth, Texas, to New York, N. Y., on meat inspection.

DR. JOHN S. GWALTNEY (Ind. '21), from Montpelier, Vt., to Trenton, N. J., on tuberculosis eradication.

DR. OTTO J. SCHRAG (Iowa '26), from Indianapolis, Ind., to Sioux City, Iowa, on meat inspection.

DR. ARTHUR R. SMITH (U. P. '08), from Pittsburgh, Pa., to Lexington, Ky., in charge of meat inspection.

DR. FRED STORZ (K. S. C. '32), from Chicago, Ill., to Kansas City, Kan., on virus-serum control.